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ON MONSTERS.

BY O. CHARNOCK BRADLEY.

(*Presidential Address read before the Edinburgh Veterinary Medical Society, November 19th*, 1897.)

THE occurrence of malformations has, in all ages and among all peoples, been fraught with great interest. From the earliest times a monster has been looked upon either with awe or aversion or a mixture of both. We all remember the wonderful animals with jointless legs and other peculiarities which Cæsar describes in his Commentaries, and we are all familiar with the fact that a large number of the mythological beings firmly believed in by the ancient Romans and Greeks possessed appendages and peculiarities calculated to impress the people of that time. Viewed in the light of modern science it seems highly probable that these peculiarities were suggested by observation of monstrous forms; this supposition being strongly supported by the fact that we now meet with such abnormalities associated with monsters. Cervical auricles, tails and goat-like legs are all mentioned or depicted at one time or another as attributes of mythological personages, be they gods, demi-gods, fauns or satyrs.

The existing evidence of the gods of the ancient Egyptians also enables us to say that probably their singular anatomical conformation was copied from teratological specimens. Take, for example, the god Ptah, and from the models at present in the British Museum we are led to suppose that this squat, large-bellied and not-over-intellectual-looking divinity was meant to represent what we now know as a cretin.

The presently worshipped Hindoo deities are mostly of such fearful shape that we are forced to conclude that they were not suggested by other than abnormal forms.

Little wonder, therefore, that the advent of a monster should have been looked upon by the peoples of the past as an evil

portent, and that the maternal progenitor of such a creature should have been the object of aversion sometimes so strong as to result in the taking of her life. In the days "when," as George Eliot so beautifully expresses it, "the summer afternoons were spacious, and the clock ticked slowly in the long winter evenings," it was natural that gossip should be aroused by the birth of something which did not conform with the general ideas of the fitness of things. And gossip quickly leads on to indignation—after which the mother's life was not altogether happy. Nowadays, when the afternoon is passed before we fully realise that it has been with us, and time is marked off by the restless, feverish ticking of the watch, we have no time for idle speculations and gossip, but must put all things, natural and apparently supernatural, to the scientific test. Therefore embryology, anatomy, physiology, palæontology, and kindred sciences are pressed into our service in order that we may arrive at a scientific explanation of any malformation we may encounter.

A knowledge of the science of embryology enables us to understand much of the causes of malformations; moreover, by a careful examination of an anomalous being and comparison of its condition with the conditions met with at various stages in the development of the embryo, it is often possible to say at what particular stage the creature in question started to go wrong. When we bear in mind that during the whole time the embryo inhabits the womb of the mother changes of structure are constantly occurring, we shall see that there are almost an infinitude of points at which digression from the normal development may take place; and therefore an intimate knowledge of development is necessary if our conclusions are to be of any value.

Evolution is another subject which cannot be neglected, for it is now admitted on all sides that an animal, during development, climbs its own genealogical tree; that is, at one time or another it bears resemblance to its ancestors. A knowledge of the ancestry of any animal is therefore of assistance in following out the intrauterine life of that animal; and reversely, embryological evidence is of use in considering details of evolution.

Time does not allow one to point out the close relationship between embryology and anatomy, biology, and allied sciences, but that such exists you will find no difficulty in admitting.

An examination of the veterinary literature of this country reveals some lack of knowledge of the science of Teratology

which is to be regretted because the subject is one which will well repay attention and, properly applied, would materially extend one's mental horizon.

Much has been done in the way of systematic classification of monstrosities, but classification is a subject of too great length to enter upon in this place. Suffice it to say that both Gurlt and St. Hilaire have drawn up exhaustive and formidable lists; which, should anyone wish it, can be examined and compared in Fleming's admirable work on "Veterinary Obstetrics."

Teratology comprises the consideration of both anomalies and monstrosities; the latter being defined by Geoffroy St. Hilaire (1) as "a collection of very complex and very grave anomalies, which renders the performance of certain functions either difficult or impossible, and which produces in the affected individuals a vicious conformation, differing materially from that which their species usually presents." From this it will be seen that the difference is one of degree only, and, indeed, it is often a matter of some difficulty to determine whether a specimen could be rightly described as a monster, or merely as an anomaly, and it is to be feared that a definition would not help much. We always feel safer, however, with a definition at the back of us, but we should remember the words of the great John Hunter, "Of all things on the face of the earth, definitions are the most cursed; for if you make a definition, you may bring together under it a thousand things that have not the least connection with it." Fortunately, a clear distinction between anomaly and monstrosity is not necessary to us now, as we are only about to consider some of the broader principles of Teratology.

The causation of deviation from the normal has received and is still receiving considerable attention at the hands of biologists. As yet, however, the results of experimental production of monsters are not sufficiently uniform to allow of any conclusions being drawn. According to the observation of Fol (2) irregular impregnation of the ovum, *e.g.*, by more than one spermatozoon, will produce irregularities of development. Gerlach experimented upon hens' eggs by varnishing part of the shell, and in this way he succeeded in producing a doubling of the anterior extremity of the chick. Panum (4) and Dareste (3) also produced irregular developmental results by varnishing the shell, as well as by subjecting the egg to variations of temperature and by applying heat irregularly to different portions of its surface. These experiments are all in the direction of testing the results of the environment upon

the embryo. And we can readily believe that any change in the surroundings will produce a marked variation in the inherent developmental properties of the ovum or embryo.

An injury, such as a blow, received by the mother we should naturally expect would have some effect upon the embryo, always supposing that the injury were of such degree as to overcome the protecting influence of the fluids surrounding the developing young. Again, it is not difficult to see how inflammation or other disease of the uterus might exert a pernicious influence upon the contents of that organ.

Maternal impressions were at one time believed to be frequent causes of monstrosities; and, though scientists no longer entertain such an idea, the lay public is loth to abandon what we must look upon very much in the light of a superstition. The lingering death that the theory of "maternal impressions" is dying is no doubt in part due to the natural inertia of the human mind, but it seems to be more so due to the lack of any more plausible or easily understood theory which could take its place; for it must be admitted that no theory has such an alluring effect as one which is full of sentiment and at the same time quasi-scientific.

The effect of dreams, of course, comes into the same category as "maternal impressions."

The umbilical cord is frequently responsible for the production of grave modifications of the fœtus, it being enabled, sometimes, to produce complete or partial amputation of parts by becoming tightly twisted around them. In this way the limbs, and even the head itself, are sometimes either partially or completely severed from the body, a circumstance which, unless due care be exercised in the examination of the specimen, might lead one to form erroneous notions as to the cause.

In these days, when so much has been put down to the influence of heredity, it is only natural to expect that the production of abnormalities should be attributed to this cause. That defects and anomalies are transmitted from parent to offspring cannot be doubted. For instance, certain families contain several members who glory, more or less, in the possession of supernumerary fingers or toes. But in this case it is only in the class of anomalies that inheritance has any influence. There is no evidence to show that the production of actual monsters "runs in a family."

The subject of dichotomy is one of singular interest to the teratologist. By dichotomy is meant the simple splitting or

fission of parts or even of the whole of the body. Small degrees of dichotomy are to be found in cases of supernumerary digits, instances of which, it is interesting to note, were recorded in very ancient historical archives. For example, Jonathan, son of Shemiah, the brother of David, slew at Gath a man of great stature "that had on every hand six fingers and on every foot six toes—four-and-twenty in number." An undoubted case of dichotomy.

Fission may implicate the limbs and in this instance the size of the resulting members is not often equal. Cleland (15) has shown that in man fission of the inferior limbs generally means fission of the pelvis as well, and when, as usually happens, two of the four limbs develop much more than the remaining two, the functional limbs are attached to opposite pelves. For instance, the right limb may belong to the right pelvis; the left limb belonging to the left pelvis. In such an instance the rudimentary limbs would be adjacent, and it is not surprising to learn that they not infrequently fuse together when we remember that symmetrical parts always tend to fuse; this being well exemplified in the ventral coalescence of the two parts of the body wall.

The dichotomy may of course affect the anterior or upper limbs in the same manner as the posterior or lower; it may also be so great as to cause the production of two fœtuses united by their heads; or there may be anterior dichotomy resulting in the production of two heads, or even of two heads and two trunks. The "two-headed nightingale" and the Siamese twins were examples of such dichotomy. Further, the fission may be so complete that separate twins are produced. Wonderful as this may appear, it is not so surprising when we learn that similar occurrences happen frequently among the lower animals. Haeckel (8) multiplied the embryos of Crystallodes rigidum by artificially dividing the eggs. Kleinenberg (9) has succeeded in tracing the full development of Lumbricus trapezoides, and has shown that two embryos may be produced from a single germ.

It would be a natural question to ask: Are all twins produced by dichotomy? Apparently not. How then are we to determine whether or not a case of twins is due to dichotomy? By observing, if possible, whether there are two placentæ and two distinct sets of fœtal membranes. If such is found to be the case, then it may be presumed that two distinct ova were impregnated; it is stated that most twins are so produced.

More could be added respecting dichotomy and its effects,

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More could be added respecting dichotomy and its effects,

but I think sufficient has been said to indicate its importance in the production of malformations.

Atavism or reversion to an ancestral type affords us a wide field in which to glean a rich harvest of interesting facts. That there is a constant tendency to revert to a more primitive and less specialised type is conceded on all sides and examples are not uncommon in teratology. Many interesting points are encountered in the study of supernumerary structures, and of such structures none are more instructive than those of the milk-secreting apparatus and the digits. We are told that the largest number of mammæ is 14 pairs, but this number is seldom reached in any animal and never in domestic animals. We are all aware that the normal number of mammary glands in the cow is four, but all of us are also familiar with an increase in that number, there being very commonly two supernumerary mammæ more or less well developed. The common situation for these extra glands is immediately behind the posterior normal pair, with which they are commonly blended. Sometimes these supernumerary glands secrete milk, which finds its way to the exterior through perfectly formed ducts; more commonly, however, they do not secrete, and their teats are blind. Cows have been known to possess no less than seven teats, all of which were functional, and Bland Sutton (5) mentions a case in which, one of the normal teats becoming obstructed, a supernumerary teat took on its function. Such cases are, however, not of common occurrence. Cases such as the above are undoubtedly atavistic, being partial reversions to a state when the number of mammary glands was much greater than it is in the modern animal.

Darwin (6) after making numerous investigations, came to the conclusion that the supernumerary mammæ in man were usually atavistic. Whether extra glands occurring in an animal with normally few glands, are due to reversion or not, may be determined by observing if they occur along the line of the body where glands are to be found in such animals as the sow and bitch. This line is anatomically indicated by an artery on each side of the body, which connects the subclavian or its representative in front, with the femoral artery behind. Aberrant glands, that is, those not developed in connection with this artery, can scarcely be considered atavistic, but can be explained on other and more strictly pathological grounds. A mammary gland, we may consider, is merely a specially modified sebaceous gland, and as sebaceous glands occur in all parts of the skin, it is therefore

natural to suppose that aberrant mammæ are merely sebaceous glands which, for some unknown reason, have become pathologically involved.

Supernumerary digits in the horse are also of great teratological interest, for it is possible that sometimes, at least, they may indicate a reversion to a more primitive type. Hensch, in his exhaustive investigations on the Hipporion—the immediate predecessor of the horse—has shown that the innermost of the three digits was the last to abort. Now Gegenbaur has insisted that atavistic parts do not belong to forms palæontologically remote, and, therefore, if the horse tended to revert it would produce digits similar to those of its more immediate predecessor—the Hipporion. As, in the Hipporion, the innermost digit lingers longer than the outer, we should expect that the atavistic supernumerary digit of the horse would be situated on the inside of the limb. Two specimens at present in this College museum have internal supernumerary digits, and, as far as I am aware, the majority of cases encountered are similar. This fact would, therefore, lead us to assert that they are cases of atavism. But we must not be too certain in our surmises; we must remember that dichotomy of the digits is exceedingly common, and consequently it is somewhat difficult to determine whether a case is one of atavistic polydactyly or merely of dichotomy. Goodall (11) has recorded a case which certainly looks very like dichotomy, for, not only was there an extra well-formed digit, but also a normally formed inner splint bone. Moreover, in his case, there was, apparently, a splitting of the trapezium; or, at any rate, such is my interpretation of the presence of five bones in the lower row of the carpus. Other cases have been described by Cassar Ewart (14), Shave (12), and others, all of which would well repay re-examination and comparison.

A very interesting case of what at first sight appears to be reversion is given uncommented upon by Chauveau (13). This writer, in one of his illustrations of the brain of the horse, depicts the pineal body as being very much larger than normal. We owe to the labours of De Graaf and Baldwin Spencer the knowledge that the pineal body is a vestigial structure, representing what was in the remote ancestors of mammals a third eye. The third eye is to be found in an atrophied and apparently functionless condition in some lizards, notably the hatteria. One would not insist, however, upon the case recorded by Chauveau being atavistic for the reason given above, viz., that atavistic variations do not belong to remote ancestral forms. This case may have been one of pathological import only.

Defective coalescence of the ventral parts of the body wall naturally results in the production of abnormalities and malformation. The degree of this deficiency is very variable. For example, Watson (10) records an extreme case in which the whole body cavity had remained open, as he says, from the neck to the anus. Not only was this so, but the vertebral column was curved in such a manner that its lower surface became superior, and the body walls were so modified that the skin of the creature was apparently inside and the viscera outside; in fact there was complete inversion.

Between such an extreme case and one of failure of closure of the umbilicus, every degree may be met with. Failure of closure of the thorax usually results in ectopia of the heart; that is, the heart is situated outside the chest. A similar occurrence in the abdomen produces ectopia of the abdominal viscera.

Incomplete development of parts of the fœtus, or, as it may be otherwise expressed, persistence of embryological states, is by no means uncommon. The condition known as cyclopia, from the resemblance to the mythological one-eyed cyclops, is caused by the improper development of the primitive cerebral vesicles. Instead of there being a division, with the resulting production of two eyes, the cerebral vesicle retains its earlier condition either entirely or partially, and a single eye or two eyes fused into one, is the consequence. Again, the persistence of the urachus as a patent tube is frequently encountered. The urachus in the fœtus serves as a connection between the urinary bladder inside the body and the allantois outside. At birth this tube should lose its potency. Sometimes it does not do so, and previous urachus is the result.

The foramen ovale in the fœtus allows of the ready passage of blood from the right to the left auricle of the heart. At birth the course of the circulation is changed owing to the dilatation of the lungs by air and the establishing of respiration; and the foramen should become gradually closed. If closure does not happen an abnormal condition is produced, which results in death of the animal.

Imperforate anus is yet another example of persistence of an embryological condition. The alimentary tract is produced, as it were, in three distinct pieces; the fore-gut, the mid-gut, and the hind-gut. These are separated from each other by membranous partitions at a certain period of development, but later the partitions disappear and a continuous tube is formed. Imperforate anus is caused by the persistence of the partition between the mid- and hind-gut.

The subject of hermaphrodites is one which we cannot well afford to avoid, although cases of hermaphroditism are apparently not very common among domestic animals. A hermaphrodite is a creature in which both male and female organs of generation are developed. An ideal hermaphrodite would be one in which the organs of both sexes are equally and well developed. Such cases in mammals are exceedingly rare, indeed it is doubtful if they ever happen. What is found much more frequently is that the organ of one sex are moderately well produced, while those of the other sex are rudimentary. That cases of true hermaphroditism are found in the lower animals is well known. A case of much interest is related by Matthews (7.) He found in a skate a well developed oviduct accompanying fully formed male organs.

The cause of hermaphroditism is not far to seek. Up to a certain stage the embryo may be described as sexless, or more correctly, it possesses elements which are capable of becoming both male and female organs. As development goes on one or other set of elements gains headway, the defeated set then retiring from the conflict. In the production of a hermaphrodite this mutual understanding, as it were, between the sex elements is not arrived at, and so both male and female organs come into existence, the one set usually advancing further towards perfection than the other.

Numerous factors, other than those enumerated above, are at work in the production of abnormalities of conformation, but I think that probably sufficient has been said to show that the subject of teratology is one which will amply repay study and which teems with interest for breeder, practitioner, embryologist, anatomist, and biologist alike.

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THE TREATMENT OF SEPTICÆMIA.

SEVERAL observations have been published on the treatment of pyæmic affections by means of yeast and its preparations.

In the *Medical News* (New York) of Sept. 25th is a paper by Dr. Walter Courtney, entitled "Yeast Nucleinic Acid in the Treatment of Septicæmia, with Report of Cases." For the purpose of this article Dr. Courtney defines septicæmia as "a general systemic invasion by one or more varieties of the pyogenic or putrefactive bacteria, their products, or both."

Dr. Courtney has observed Dr. Vaughan's experiments with yeast nucleinic acid on rabbits and guinea-pigs which had been inoculated with the bacillus tuberculosis, the bacillus of tetanus, and the bacillus anthracis, and in different animals. The inhibitory and frequently curative effect of the nuclein treatment of these various infections are most marked, and Dr. Courtney subsequently tried it in the treatment of patients suffering from septicæmia. The results, as shown by ten cases published in full, were very satisfactory, only one case proving fatal; but, as Dr. Courtney candidly admits, the auxiliary treatment employed may have had something to do with the results. These aids were those "which effect free elimination by all of the emunctories that may be pressed into service, so as to rid the system of all the toxins possible," especially free purging. Dr. Courtney sums up his experience thus: (1) The yeast nucleinic acid should be given at the earliest possible moment that septic infection is suspected. The physician should not wait for the typical and classic symptoms as given by text-books. Dr. Courtney's observations have led him to believe that if delay is made until rigors, icterus, diarrhœa, delirium, or apathy, profuse perspiration, and a foul-smelling and discharging wound are added to an abnormal increase in temperature and pulse-rate, and a restless alertness on the part of the patient, to convince the observer that it is septicæmia that must be dealt with, instead of surgical fever or something else, a serious waste of most valuable time must occur. (2.) The nuclein should always, in septicæmia at least, be given hypodermically if possible, in order to secure prompt action of the given dose. If the 1 per cent. solution is used, at least from 30 to 40 minims, undiluted, may be given every three or four hours. If the 5 per cent. solution should be used from 10 to 15 minims may be given every three or four hours, but ought to be diluted with distilled or at least with sterile water. This is necessary to avoid the

local reaction which is sometimes caused when this solution is given undiluted. In Dr. Courtney's experience the 5 per cent. solution is preferable, for one reason at least, it is always stable. The 1 per cent. solution is not stable, it sometimes becomes cloudy and unfit for use. (3.) The injection region should be examined daily in order to determine if local reaction can have anything to do with the patient's increased temperature and pulse-rate. If it has it is due to one of two things—either to insufficient dilution of the 5 per cent. nuclein solution, or to imperfect preparation of the skin or syringe. In conclusion Dr. Courtney remarks, "The result of my work with yeast nucleinic acid in septicæmia is sufficiently encouraging to justify a feeling of confidence and a continuance of its use."

ON THE USE OF PICRIC ACID AS A PRIMARY DRESSING FOR BURNS.

BY ALEXANDER MILES, M.D., F.R.C.S., ED., SURGEON TO LEITH HOSPITAL.

IT will, I think, readily be admitted that the methods hitherto at our disposal for the immediate treatment of severe and extensive burns are far from satisfactory. In such cases the amount of damage to tissue varies at different parts of the injured area, and varies irregularly, so that usually we have in any given patient several "degrees" of burning to deal with. The treatment suitable for the more superficial degrees is less appropriate for parts which have been burned to a greater depth, and as the precise degree of a recent burn is at first sight almost impossible to determine, it is obviously difficult to select the appropriate dressing with certainty.

The selection of a first dressing for a recent extensive burn or scald depends on the answer to the question—What are the objects aimed at in the local treatment of such a case? These are, I take it—(1) *to relieve pain;* (2) *to prevent sepsis,* so that we may reduce the amount of discharge from suppuration to a minimum, and thus obviate the necessity for frequently changing the dressings; (3) *to allay the inflammatory process* induced by the irritation of the moist or dry heat as the case may be; (4) *to prevent the spread* of the inflammatory process to surrounding parts, which have necessarily been devitalised. This point is closely bound up with the question of sepsis, dryness and infrequent dressing; (5) *to promote the rapid separation of sloughs* with a minimum

of suppuration, by a process of dry gangrene, and so to diminish the amount of tissue which will require to be replaced by contractile cicatricial material; (6) *to encourage*, as speedily as possible, the formation of a covering of *healthy granulations*.

When we ask ourselves how far our ordinary dressings, such as eucalyptus, carbolic or Carron oils, boracic or other ointments, alkaline lotions, or powders of various kinds meet these different indications, we must admit that they fall far short of our desires. The very multiplicity of the agents recommended argues for their inefficiency.

Experiments with picric acid (carbazotic acid) have recently been made on the continent by Delpech, Thiery, Filleul, and others, and later, D'Arcy Power has brought this method under the notice of surgeons in this country. Some months ago I showed to the Society a number of patients on whom I had tried the effects of this treatment for burns of varying degrees of severity, and as the method appears to me to be vastly superior to any other with which I am acquainted, I venture to describe it in greater detail than was possible on the occasion referred to.

Method.—When a patient, say a child whose clothes have caught fire, is met with suffering from extensive burns, the parts are carefully cleansed with weak carbolic or boracic lotion, and unless the shock is profound chloroform is administered to enable this to be thoroughly done. Blisters are pricked and the separated epidermis removed. A single thickness of ordinary white surgical lint, or pads of sterilised gauze, are lightly wrung out of a solution of picric acid, made up as under—

Picric acid ...	...	1½ drams.
Absolute alcohol ...		3 ozs.
Distilled water to ...		40 ozs.

and applied to the sore and adjacent areas. A moderately thick layer of corrosive wool is put on over this, and retained in position by a bandage—preferably a many-tailed bandage, to prevent undue movement of parts at subsequent dressings. Where possible a splint to ensure rest is advantageous. It is important to observe that the dressing is *not* put on as a poultice.

Subsequent dressings.—The time which may elapse before the dressing is changed depends on the amount of discharge, the smell from the dressing, and the patient's temperature. In some very severe burns I have left the original dressing on as long as five days; in others it has been necessary to change

it earlier, but never before the third day. The procedure is precisely the same as at the primary dressing—careful removal of all discharge, thorough purification, and reapplication of the lint out of picric acid solution. It is not necessary to remove any portion of the original dressing, which is perfectly dry and firmly adherent to the wound. It should simply be moistened by a stream of fresh picric acid from a swab. The dressing is repeated once or twice a week, according to circumstances.

Value of chloroform in the dressing of burns.—I should here like to emphasize the advantage of administering chloroform for the dressing of these burns, especially in children. Without anæsthesia it is impossible to ensure the thorough cleansing, which is so essential to the exclusion or control of sepsis, without subjecting the patient to an amount of pain and exposure which must be hurtful. A small dose suffices, and the advantage both to patient and surgeon amply compensates for the slight extra trouble and risk.

Advantages of the picric acid method.—From what I have seen of this method I think it possesses the following advantages:—

1. *Simplicity.*—Nothing could be less troublesome than the application of the dressing.

2. *Painlessness.*—The solution does not appear to cause any pain when prepared as above. If methylated spirit be substituted for absolute alcohol it may do so.

3. *Asepis.*—Judging from the small amount of discharge, the comparative absence of smell, and the modified temperature of the patient, even after several days the effect of picric acid in keeping down septic changes seems to be greater than that of the other substances in general use.

4. *The small amount of discharge and absence of smell* of course depend on asepis.

5. *Infrequent dressings.*—This also is a result of asepis, and is an enormous advantage to everyone concerned. With none of the ordinary methods can intervals of from three to seven days between dressings be allowed to elapse with comfort and safety.

6. The *astringent action* of picric acid on the dilated blood-vessels of the surrounding hyperæmic areas, is of value in controlling inflammation and preventing that spread which is popularly believed to go on for eight days after a burn.

7. *Its effect in promoting the growth of epithelium* (keratoplastic action) is most evident in superficial burns, which are often covered over with astonishing rapidity under a single dressing.

8. The rapidity with which *sloughs separate* and *granulations spring up* is another advantage of the method.

9. *Absence of symptoms of poisoning.*—I have never seen, nor have I read, of any symptom arising during the use of this drug, which could be attributed to its absorption.

10. A not unimportant advantage in many cases is the *economy in dressings* which is effected as a result of the infrequency with which they have to be changed.

Disadvantages:—The only inconvenience attending the use of picric acid for this purpose is the staining of the hands and bed-clothes. The hands may be protected to a great extent by smearing them with vaseline before using the dressing, and by washing with turpentine and methylated spirit after. Stains are easily removed from cotton or linen clothes by ordinary laundry processes, but are permanent in woollen or flannel articles.

Cases in which it is applicable.—The method has been recommended by the various authors referred to chiefly for cases of *superficial* burning, and undoubtedly the results obtained by it are most striking in these cases. This is to be expected, and the same may be said of any of our methods. I have used it in burns of all degrees,—even to the fifth and sixth degrees of Dupuytren where joints have been exposed —and am convinced that, as a primary dressing, it is superior to any other I have seen. In one case where the patient had been burned over both hands, my house surgeon, Dr. Milne, applied picric acid dressing to one hand, and eucalyptus oil to the other. He assures me that in regard to painlessness, dryness, and rapidity of healing, the picric acid was much the superior dressing.

Limits of the method.—Like all methods of treatment it has its limits. A time comes in the course of the deeper varieties of burns, when the indications for treatment change. After the inflammation has subsided, the sloughs being thrown off, and a covering of granulations formed, the conditions present nothing peculiarly inherent to a burn. A healthy healing ulcer has been produced, and must be treated on the same principles as any similar surface from whatever cause resulting, by protective dressings, skin-grafting, etc. Picric acid is perhaps no better for this purpose than Carron or eucalyptus oil, but it is no worse. The chief merit of the method seems to be that it brings a burn into the state of a healthy healing ulcer more simply, more safely, and more rapidly than do the older methods. This having been done its usefulness ceases.—*The Scottish Medical and Surgical Journal.*

THE BOARD OF AGRICULTURE AND THE BOYCOTT.

THE following has been sent out by the Secretary of the Board of Agriculture:—

On the occasion of the recent conferences of the Scottish Chamber of Agriculture and associated societies, the representatives of the Board of Agaiculture, Mr. T. H. Elliott, C.B., the Secretary of the Board, and Sir Jacob Wilson, their agricultural adviser and the director of the land division, were greatly impressed by the strength and unanimity of the opinion expressed as to the detrimental effects upon agricultural interests of the action taken or proposed to be taken by certain associations of butchers in Scotland. It was claimed that agriculturists had a right to expect that salesmen to whom they consigned their stock for sale should not refuse the bid of any solvent person, and that they were entitled to carry on their business in any legitimate way without being subjected to exclusion from any market or mart, or to other consequences intended to restrict their liberty of action.

The representations thus made to Mr. Elliott and Sir Jacob Wilson were at once brought by them under the notice of the President of the Board, and in accordance with instructions which were received from Mr. Long, the representatives of the Board placed themselves in communication with Mr. J. M. Fraser, of the firm of Messrs. Macdonald, Fraser, and Company (Limited), and Mr. James Swan, of the firm of Messrs. John Swan and Sons (Limited.) These gentlemen received the Board's representatives in a very courteous and friendly spirit, and at once expressed themselves as ready to discuss the position with a view to ascertain in what manner agricultural interests could best be served and protected against injury in consequence of the proceedings above referred to. With this object it was arranged that Messrs. Swan and Fraser should meet the representatives of the Board and three or four agriculturists who had not previously been very prominently associated with the movement in opposition to the proceedings of the butchers' associations, in order that the position might be fully considered. A meeting accordingly took place at the Royal Hotel, Edinburgh, on the 3rd inst., with Mr. Elliott in the chair, and at the conclusion of the proceedings the following memorandum was signed:—

Memorandum.

On the invitation of the representatives of the Board of

Agriculture, the undersigned met this day at the Royal Hotel, Edinburgh, to consider in what manner the interests of all concerned with the production and sale of live stock may best be protected from injury in consequence of the proceedings recently taken, or proposed to be taken, by certain associations of butchers in Scotland.

After conversation, it was found that there was a general agreement:—

(1) That agriculturists ought to be at liberty to consign their stock for sale, or to dispose of it, in any manner which they may consider most beneficial to them, and that any endeavour to prevent them from selling, or to obtain from them a pledge not to sell, their stock, either directly or through their salesmen, to any particular class of purchasers, is detrimental to their interests.

(2) That agriculturists may fairly expect salesmen to whom they consign their stock—

(*a*) Not to refuse the bid of any solvent purchaser;

(*b*) Not to take any part in any attempt to obtain from them, against their will, any such pledge as is above referred to;

(*c*) Not to take part in any action which may be taken against individual agriculturists in consequence of a refusal to give such a pledge.

(3) That it is the duty of agriculturists to give their active and practical support to salesmen who express their intention to act on the lines above indicated, and in the event of any attempt to secure the abstention of purchasers from sales of live stock belonging to particular owners or conducted by particular salesmen, agriculturists and salesmen should co-operate so as to reduce to a minimum any temporary loss which may arise by reason of such abstention.

(4) That such co-operation can best be effected—

(*a*) By the adjustment, as far as practicable, of the supplies of stock sent forward for sale;

(*b*) By a united endeavour to secure for those salesmen who are acting with agriculturists in this matter the support of butchers and other purchasers to the fullest extent possible;

(*c*) By a united endeavour to obtain the support of consumers for all retailers of meat who are under no obligation to purchase their supplies in any particular manner.

(5) That the undersigned will take such steps, and at such

a date, as they may consider most likely to carry into practical effect the general conclusions above set out.

(Signed)
ANDW. RALSTON (Glamis).
JOHN WILSON (Chapelhill).
J. M. FRASER.
JAMES SWAN.
JAMES INGLIS DAVIDSON (Saughton Mains).
T. H. ELLIOTT, Secretary to the Board of Agriculture.
JACOB WILSON,
Agricultural Adviser and Director of Land Division.

3rd November, 1897.

Mr. Long has subsequently expressed his full concurrence in the conclusions thus arrived at, and it is earnestly hoped that all classes concerned in the maintenance and development of agricultural interests will do what is in their power to carry them into practical effect.

Army Veterinary Department.

VETERINARY-LIEUTENANT E. W. LARNDER joined at Colchester for duty with 1st Dragoon Guards, 17th instant.

Veterinary-Lieutenant F. Eassie arrived at Newbridge from Limerick for duty with Royal Horse Artillery, 3rd instant.

Veterinary-Captain J. A. Braddell and Veterinary-Lieutenant H. T. Sawyer embarked in s.s. *Nubia*, 17th inst., for India, to complete tour of service in that country.

Editorial.

ADVERTISING.

WHAT is advertising? What is an advertisement? Is it permissible for professional men to advertise as it is for commercial men; and if not, why not? These, and similar questions, are agitating the veterinary profession at present, and they may form the basis of profitable discussion in this journal. The primary essential in such cases is to define

terms, keep a clear view of the object at which we are aiming, and not let ourselves be diverted therefrom. Clear thinking is the necessary preliminary to persuasive speech or effective writing.

It must be confessed that advertising, as at present carried on in the business world, has many disagreeable and repellent features, and calls for severe remedial measures. We do not wish to be constantly reminded as we travel through picturesque parts of the country that somebody's pills are of greater value than all other drugs, that only one brand of whisky or ale is worth drinking, that we must use a particular kind of soap if we wish to maintain perfect health and the cleanliness that is next to godliness; all these flaunting placards appear to us impertinent and insulting. But it is a different story when we go to a particular town in search of a particular article for which it may be famous, or to visit the theatre, the school, the church, or the picture gallery of that town, which have given it a special interest; then we hail every advertisement that helps us to find what we want, every clue that helps us to arrive at our shrine. Even in passing through a town we are glad to catch a glimpse of its famous factories; we are glad, when passing through Burton, if Messrs. Bass enable us by a prominent notice to locate their establishment and so to enable us to boast that we have seen their gigantic brewery even from the outside. We do not object to the pill-maker or soap-boiler proclaiming his existence and asserting his activity in the town which he may have enriched thereby—what we do object to is the thrusting of his vaunts upon us at every moment and at every turn of the street, at the most inappropriate time and in the most irritating manner. It is the same with our literature, whether in book or newspaper form. We feel a natural and quite justifiable resentment when a picture of some ugly beast or commonplace man or woman is surreptitiously brought before our eyes as we turn over the pages of an illustrated weekly and we find that we are face to face with an impudent puff adroitly mingled with the ordinary letterpress. It is quite otherwise when we find at the end of our book lists of works published by the same firm; these lists may be of the greatest utility to us in prosecuting our enquiries or extending our studies. So with a newspaper; we gladly turn to the advertising pages when we wish to engage a servant, to buy or sell a house, to procure a certain article which we require, to obtain information as to church, school, or theatre—indeed, we may say that in such concerns

of daily life the advertisement columns of a newspaper are now quite indispensable.

Let us see now what bearing all this has upon the veterinary profession, how far it is permissible to advertise, in what cases we are bound to advertise. Probably this last clause may alarm the more conservative members of our profession, and produce a feeling of irresistible antagonism, but let these worthy people hear both sides of the question. We have said that advertising is in our opinion unjustifiable—is, in fact, a nuisance—when forced upon us against our will, or when it takes the form of a vaunt or piece of bravado. And we should utterly condemn a veterinary surgeon who should degrade himself so far as to boast, in print or on a painted board, of his superiority to all other surgeons either in point of skill or of cheapness. In the latter case especially he deserves no mercy, and should be severely reprimanded by those in authority as a traitor and a sneak, and if he prove impenitent should be dismissed from our honourable corporation. Heaven forbid that we should live to see the day when placards should stare us in the face at every street-corner informing us in some horrible jingle that, "If you want to cure coughs in cattle, consult Cadby, Corporation Street," or, "The cheapest house in the county of W—— for castrations is Bouncer Brothers. Great reductions made when animals are sent in large numbers. Send for price-lists and estimates." Such a day would mark the beginning of the end of our profession.

But an advertisement is justified when it proclaims to those who belong to the advertiser's own world the virtues and advantages of some discovery or some manufacture. In this connection we need not find fault with a veterinary surgeon who, having found a new and better way of treating certain animals or performing a certain operation, should openly invite his professional brethren or others interested in such matters to visit him or be present at his public appearances. This, however, may be debated, and good men may be found on either side of the question without any likelihood of coming together.

There is, however, a third aspect of this question of advertising, and it is one which we think ought to be very carefully and quite dispassionately examined. It is this: ought a veterinary surgeon, out of—shall we say?—modesty or, it may be, vanity—(who does not know me A. B. the only veterinary surgeon worthy of the name in the town, nay, the whole county of W?), or perhaps fear of the Council, or, if he

be rich, mere laziness—ought such a man, we say, to conceal his identity and hide his light under a bushel? Doctors are often—one might say, generally—sent for in a hurry, under the pressure of some sudden calamity; there are others beside their own patients or clients who may in an emergency demand their services at very short notice; very often the messenger is suffering from painful excitement and has not all his wits about him. He cannot make the calm search which he might make if he were looking for the place of business of his grocer or bookseller; it may be dark and stormy. or he may have set out on his quest late at night or early in the morning when few people or none are stirring. Is it not the duty of every veterinary or medical practitioner to give some clear indication of his dwelling? It is a pity that the red lamp which used to indicate the doctor's house is so seldom to be seen nowadays; one is almost tempted to wish that such ensigns were compulsory. Even in the daytime some indication of the abode of a surgeon—veterinary or human—is urgently required. Let it be a large brass plate or a painted board, and if the surgeon live in a side-street, then let him by all means give token of his existence by a plate or board set up on the main thoroughfare or, if you like, even at the railway station or other public place. We go along the streets of a town; we want, let us say, a pair of gloves or a tie: here is a hosier's shop, as indicated by the goods displayed in his window—doubtless he will be able to supply our wants. Or our wife, trustful woman, has commissioned us to buy some ribbons for her: here is a draper's shop and we enter with many tremors, hoping that the disdainful maiden behind the counter will understand our orders better than we do ourselves. With the veterinary surgeon there is nothing to guide us, he has no ensign, there is no clue through the labyrinth of streets.

Let us not forget that we are a privileged body, that we enjoy a sort of monopoly under the Crown. Let us avoid everything that smacks of vulgar ostentation and parade, let us abhor everything like underselling or unbrotherly competition, but do not let us be afraid to proclaim our existence to the whole world.

EXTRAORDINARY FREAK OF NATURE.—An extraordinary freak of nature has just occurred at Aylesbury, where a cow on the farm of Mr. J. Alcock has given birth to a calf with a head exactly similar to that of an elephant, with a trunk several inches in length, and large flat ears.

BORDER COUNTIES VETERINARY MEDICAL SOCIETY.

A MEETING of this Society was held at the Bush Hotel, Carlisle, on Friday, the 19th November. Among those present were Mr. Garnett, Windermere (President); Professor W. O. Williams, Edinburgh; Mr. Carlisle, Mr. Hewson, Mr. J. G. Bell, Mr. McKie, Carlisle; Mr. Howe, Keswick; Mr. Crondace, Haltwhistle; Mr. J. Armstrong, Penrith; Mr. Lindsay, Dumfries; Mr. Martin, Appleby; and Mr. H. Thompson, Aspatria (hon. sec. and treasurer).

Minutes of last meeting were read and discussed, and signed by the chairman.

The Sanitary Condition of Horse Boxes.

The PRESIDENT said he noticed that there had been a special Commission appointed by Parliament with regard to the carriage of animals in Ireland, with no reference to England. He wrote to the Home Secretary, saying the subject had been under the consideration of the Border Counties Society, but he had had no reply. He thought some further action sheuld be taken, and if the Commission sat early they should place before them the resolution on the subject passed at last meeting, and, if possible, some veterinary surgeon should appear before the Commission.

Mr. ARMSTRONG said he noticed that a writer in the *Sporting Chronicle* was taking up the matter from a racing point of view, and if the veterinary profession did not look sharp they would only come off second, and would get no credit for bringing the matter forward. What he wanted was that horse boxes should be made as clean as trucks which were used for animals of only one-third the value. His motion passed at last meeting was for the appointment of a small committee to ask the railway companies to make this concession. What was more objectionable than to see a horse put into a box where the dung of a previous horse was still lying, and the "foil" standing an inch high—he had measured it. When he had been asked to take a £2,000 horse away, he could not obtain the same cleanliness that he could for a cow worth only a few pounds. He meant to hold out against it.

The PRESIDENT said they would get more by applying to the Home Secretary than to the railway authorities.

Mr. ARMSTRONG said that since the matter had been brought to the front the horse boxes in use at Penrith were now properly swept, and antiseptics used.

Mr. J. G. BELL said the subject was brought up twenty years ago by the county local authority, and the Board of Agriculture had since moved in it.

Mr. THOMPSON said he thought there was something in the Act providing that all horse boxes shall be thoroughly cleaned.

New Member.

On the motion of Mr. THOMPSON, seconded by Mr. HEWSON, Mr. Edward Thompson, Morecambe, was admitted a member of the society.

Thanks to the President.

Mr. ARMSTRONG referred to the very enjoyable meeting held by the society, on the invitation of the President, in the Lake District, and said they should try to make their annual meeting in the summer, and hold it in the Lake District; he moved a resolution to this effect.

Some discussion took place on the point, and it was agreed that an annual gathering be held in the Lake District in the summer.

On the motion of Mr. ARMSTRONG, seconded by Mr. HEWSON, a hearty vote of thanks was passed to the President for his kindness to the members at the last meeting.

Nomination of President.

Mr. Garnett was pressed to continue in the office of President another year, but declined, being of opinion that the office should go round. It was eventually agreed to nominate Mr. Carlisle, the "father" of the society, to the office, on the motion of Mr. ARMSTRONG, seconded by Mr. CRONDACE.

Skin Diseases of the Dog.

Professor OWEN WILLIAMS then gave his address upon diseases affecting the dog species. As a rule, he said, papers were read on diseases affecting the horse or ox tribes. His reason for giving this lecture on skin diseases of the dog had been prompted by the fact that, having gravely thought over the matter, he had almost come to the conclusion that the majority of veterinary surgeons would have, sooner or later, to depend greatly upon their dog, cat, and cattle practice. What with cable cars, auto-cars, and bicycles, what was going to become of the horse tribe? It was pretty well known that cavalry regiments had their cycling clubs, and cavalry officers and many others who used to have horses and traps now made their afternoon society visits on cycles. Again, what with Canadian, American, and Argentine beef, and Australian and New Zealand mutton, they would soon have no animals to treat except the pet domestics, such as the dog, cat, and canary. He had a fair amount of practice with canaries, parrots, pigeons, and occasionally with fowls, and if they developed this kind of practice they would make money. In Portobello, where he lived, they had pigeons which sold at £50 and £100 apiece, and owners of such birds did not mind paying a decent fee. A number of years ago he knew nothing about birds, but he had now been reading the subject up, and he hoped some day to be able to read a paper on diseases of the pigeon. He regretted that what was called dog practice had been looked upon by many as derogatory. Was that so? For the sake of the argument, which was the more appreciated animal, as regarded affection? He was under the impression that the horse was made to drive, the ox was fed to be eaten, and the dog, cat, and canary, etc., were kept to love. He had found that the most difficult thing to do was to treat a dog with a skin disease when the owner desired it done at home. In ordinary practice drugs and dressings were used which were not pleasant for a lady's dress or to be smeared on the hearthrug or sofa. The most common skin disease of the dog was from fleas. The usual treatment was to wash the dog in some solution which contained poison, which killed the insects. But a week later it might be found that the dog was again troubled with fleas. It was necessary, then, to rid the place where the dog had been living, of fleas. The life-history of the insect showed that the female flea, living on a dog, would walk along one of the hairs, and when she reached the end she would drop an egg or two which fell on to the carpet of the room. At the end of a fortnight the egg produced a maggot, which crept about on the carpet or in the straw, and fed on anything. Nothing pleased them more than to feed on dry blood. He had one on exhibition in the room, under the microscope. The maggot ultimately turned into the chrysalis, and in another fortnight became a flea. It was common for people to say, "Here is my dog, without a flea on him; dressed with insect powder, and washed and combed, yet the house is full of fleas." It was simply

because the lady fleas had been laying their eggs all over the place. It was important to have everything with which the dog had been in contact thoroughly scalded or disinfected. A pet dog might be allowed to lie in a bedroom, and the lady fleas would there lay eggs and it was impossible to sleep. In that case get some flypaper and place it under the bed, and place upon it a quarter of an inch of raw beef or mutton. The fleas hop on to the paper, but fail to reach the meat, and in the morning there would be a nice crop of fleas on the paper. He always gave instructions for straw to be burned and the place scalded, so as to get rid of the embryonic fleas. The next insect causing skin disease was the louse. There were two kinds affecting the dog. One was long and narrow, yellowish, and about the sixteenth of an inch long. It was usually found about the nose, eyes, or ears. The other form of louse had a rounded body, and usually affected the region of the tail. It waited about there on the chance of the dog passing a worm, or the eggs of certain tapeworms. The louse caused irritation in the region of the anus, and the dog bit and scraped at the place, and got the lice into his mouth, and swallowed them. They afforded one of the few examples in which parasites and host lived upon one another. Ordinary lice affecting head and ears were not of very great importance; still, they were nasty to have because they got on to human beings. They could be got rid of easily by washing with carbolic soap. The most important thing was that washing must be frequently repeated, or the eggs would hatch and a new breed created. A dog should be washed twice a week if he was lousy. One might have a valuable greyhound bitch, for instance, with tail lice. When she whelped, the pups trying to get the milk, swallowed the lice, which contained cysts, and thus the greyhound pups became cram full of tapeworms. Thus it was advisable to see that a bitch, before she pupped, had no lice about her. There was a common disease among sheep dogs due to tick. The ixodes were minute, like pin-heads, and grew to the size of half a pea. They usually affected the face, but were found along the belly, and, if a bitch, in connection with the mammary glands. In cattle they produce slight disease; in sheep serious disease—louping-ill; but in the dog they suck his blood, but do no particular harm. The next most important thing was mange, of which there were three distinct forms, though in his opinion there were four. The first was red mange, due to a minute parasite known as a sarcopt. A dog contracted the disease probably by smelling noses, and he got an itchy face. He got slightly raw about the eyes; the hair fell off; the dog became sore and raw between the forelegs and hindlegs. He was continually scratching; he might lose his appetite, and certainly lost his condition, and an examination showed that these portions of the body were covered with minute pimples, and when a section of skin was placed under the microscope parasites would be discovered, having burrowed into the skin. The parasite, after getting into the skin, lays eggs, and at the end of 14 or 16 days it may die, the eggs hatching in the meantime, and the embryo or another parasite comes out and makes a burrow for itself; and so the mange extends from channel to channel. The first thing to do is to give the animal tonic medicine—arsenic and sulphur were two good things. In bad cases he suggested that the dog should be clipped, so that the dressiug could penetrate to the skin. He never permitted an owner to think that a dog had recovered until three weeks had elapsed. It was a disease unfortunately too common. The kennel should be thoroughly disinfected, and if a mat had been used, burn the mat. The next form of mange was follicular mange, which was not due to a parasite like the sarcopt, but to a parasite more like a grub. It did not burrow, but it gained access to the hair and hair follicles, and caused a

most peculiar change. The dog became rough in his coat, and had a peculiar odour, smelling like a cupboard that had mice in it. Hair came off in patches, as if snipped out with a pair of scisssors; and when placed under the microscope, the hairs were found to be split, and were full of grubs. The disease caused great irritation; the dog scratched itself frequently, there was an exudation of serum, and thick scabs formed in different parts of the body. In a case like this, unless the dog was of value he ought to be put down at once and the body burned. He did not believe in putting them into a hole or manure heap. The parasite was one of the very lowest forms of parasites, and caused most serious disease. If you should treat the animal, he must be clipped and shaved, and washed with a solution of soda or potass so as to remove all portions of scab; and then dressed with a mixture containing creosote or oil of tar every few days for several weeks. Weeping mange was the next, and it was a dietetic disease. It usually occurred in pet dogs of ladies. The custom with such owners is to let their pet out of doors during the evening, and frequently when let out they went to the nearest ash bucket and fed on portions of fish or some indigestible or decomposing matter, the animal having a depraved appetite. The dog is fat, not hungry, and will eat any rotten stuff; and the next morning he is discovered to have two or three wet patches on his body. The hair is loosened, and the patches are oozing serum. If the patches of wet hair were removed, there would be seen a raw sore, varying from half-an-inch to four or five inches. It was like nettle rash. He gave such dogs a good dose of physic, and fed them highly (on nothing but water) for a couple of days. He applied zinc ointment locally, and in two days he found that the epitherium had regrown and the discharge had ceased, He removed the matted hair so as not to leave a cause of irritation. Another form of skin disease was chronic or hereditary eczema, which occurred in mastiffs and dogs which had little hair about their legs. It was dry eczema—the hair fell off, the skin was red, and the dog was irritable. There was no sign of red mange or follicular mange, or of any of the other skin diseases. The disease was from the stomach, and he treated it with tonics internally—arsenic, strychnine, etc. Another form of disease he would mention. It had not been described in books yet. There were some peculiarities about it. All the cases he had seen had occurred in dogs in the county of Fife. The first case he saw was that of a black dog which had bare patches on his hind legs, rump, and tail, but no signs of disease. He looked as if he had rubbed himself bare. In each of these patches were dozens and dozens of holes, like a sieve, and out of them came a black discharge, followed on further squeezing by a discharge of blood. All he could microscopically discover was an enormous number of ordinary putrefactive bacteria. About three years ago another dog was brought him. He found it had been near certain kennels where the previous case had occurred. He had another case at the present time. Dr. Hunter told him the disease looked like leprosy or a skin form of tuberculosis. He hoped before long that they would know exactly what it was. Another form of disease that he had seen was a vesicular eruption rather like foot-and-mouth disease, and they found it in dogs which had sore feet and blisters between the digits, which were apt to give a great deal of trouble.

The PRESIDENT said they had to thank Professor Williams for the excellent address he had given. He agreed that there was money to be made in the dog business, however much it might be looked down upon by some of the higher members in the profession. He had a friend who had given attention to dog practice, and who now had fifty or sixty dogs a week in his kennels, and he charged from 5s. a week for dogs just taken in, and in some cases a guinea, according to treatment, and he made hundreds a year out of dog

treatment alone. With regard to poultry, he mentioned a friend who took up poultry keeping, and who had made a paying business of it. He complained that, with one exception, there was no veterinary surgeon in England, Scotland, or Ireland who could tell him intelligently how to treat diseases of fowls. He was one of very few who paid large prices for poultry, and he would pay as much as £25 for a single cock. Such a man would not mind paying reasonable fees for treatment of his birds. The bird business was on the increase. At the last Crystal Palace Show there were 8,000 entries. They were increasing in value at an enormous rate. No other form of agricultural produce was increasing in value at the same rate as poultry, rabbits, and pigeons had done during the last ten or fifteen years. It was from these small subjects they might have to look for their living and future profits, and for that reason alone they owed a debt of gratitude to Professor Williams for introducing this simple but deep and interesting subject of skin diseases amongst dogs. As a rule, cases of mange were treated by rule of thumb, and little distinction was made between them. It was in the discrimination of the diseases that lay the difference between the quack doctor and the professional man. As to the case of weeping mange, he did not quite understand to what the professor attributed it. Was it simply a stomach disease, or was it due to parasitic affection produced through eating putrid flesh? It was the most loathsome of skin diseases, but it answered to this treatment—ordinary zinc oxide and carbolic acid, the proportion being ten per cent. of the latter to the former.

Mr. H. THOMPSON said he knew little or nothing about dog practice, and could not say anything about it. He thanked the Professor for his interesting address. Which of them would have thought of clipping the hair off a dog and then shaving it? The Professor's father, Principal Williams, had promised to give them a paper on the diseases of the chest in horses, but was unable to come to that meeting, and sent his son instead with this valuable lecture. He noticed that dogs obtaned fabulous prices as well as poultry; and now that bicycles, autocars, and electric machines were running away with the horse, they must do something for the other domestic animals.

Mr. CARLISLE asked if there was an instance of itch or scab being conveyed from a dog to a human being? Was it hereditary? Sixty years ago he heard a gentleman say that scab had its origin in Scotland.

Mr. ARMSTRONG asked how skin diseases could be obtained through the digestive organs? How was it that the lice of cattle would never exist on man, and the lice of horses would be conveyed back from man to the horse?

Mr. HOWE said he had not seen a horse scabbed now for twenty years.

Professor WILLIAMS said it was in 1879 or 1880, when the American horse disease was prevalent in Cumberland and in Newcastle.

Professor WILLIAMS expressed his thanks for the society's reception of him and his lecture. He appreciated this—he had found a man who did not know everything, and that was Mr. Thompson. Weeping mange he regarded as a dietetic disease, due to acute irritation of the stomach. There was reflection from the stomach to the mucous membrane, and the irritation was reflected to the skin. The louse on horses was tenacious—there was a great deal of the Scotchman about it. It would remain on a man for 24 hours, whereas the louse of the ox would not remain on a man more than an hour or two. They only inhabited hairy places, and were found on the eyebrows or beard, so that to be rid of them they must imitate the monks of old and shave.

A hearty vote of thanks was accorded to the Professor, on the motion of the PRESIDENT, seconded by Mr. THOMPSON.

WESTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

Meeting at Plymouth.

A MEETING was held at the Globe Hotel, Plymouth, on Thursday, 4th November. Mr. W. Penhale (president) occupied the chair; there was also present Messrs. Jno. Dunstan (hon. sec.), P. G. Bond, F. P. Collings, W. H. Bloye, Plymouth; W. B. Nelder, Exeter; G. W. Gibbings, Tavistock; F. T. Harvey, St. Columb; and E. A. Bartlett, Dartmouth.

The HON. SECRETARY said that letters and telegrams apologising for unavoidable absence had been received from Messrs. J. A. Collins, J. P. Heath, Wm. Roach, H. Sturge, R. G. Saunders, Exeter; Golledge, Sherborne; Thos. Olver, Truro; W. Ascott, Bideford; A. Maynard, Penzance; G. H. Elder, Taunton; E. J. Bath, Bristol; F. G. Relf, Wrexham; E. Langford, Shaftesbury, and C. Parsons, Launceston.

In reply to a member, the Hon. Secretary said he had received nothing from Barnstaple. He read a circular from Mr. Wm. Hunting, inviting attendance at a conference of delegates from the various veterinary medical societies on October 29th, at Leeds, to consider the best method of effecting a direct connection between all the local societies and the National Veterinary Association—of forming a bond of union which should not interfere with the independence of the societies.

The HON. SECRETARY: Two years ago we appointed a sub-committee to consider this question; but this circular has come too late for us to do anything now. The least we can do is to write and apologise for our apparent neglect and say it arrived too late for discussion.

The Proposed Benevolent Fund.

A circular was read from Mr. F. C. Mahon, Hon. Secretary of the Central Veterinary Medical Society, with regard to the proposed Veterinary Benevolent Fund. The circular asked for an expression of opinion as to whether it would be convenient to have the first meeting of the General Committee at Reading on the day of the meeting of the National Veterinary Association on August 11th.

The HON. SECRETARY: The date of the last meeting of the association was April 22nd, so that the circular came between the two meetings. It is not too late if they want a subscription. They have some influential men on the committee.

Mr. NELDER: I propose that it lie on the table and that we do as the other societies do.

The Royal Agricultural Benevolent Institution.

The local hon. secretary of the Royal Agricultural Benevolent Institution wrote asking if he might place the association on the list of annual subscribers.

The HON. SECRETARY: I don't think that interests us very much.

The CHAIRMAN: No, I think we had better pass on.

Mr. GIBBINGS: I believe the societies in the Eastern counties subscribe to the Royal Agricultural Benevolent Institution. I don't know whether it would be possible for us to subscribe. We must derive considerable benefit from the agricultural interest.

Mr. BOND: Veterinary surgeons already subscribe a lot to matters connected with agriculture—more than they ought to do.

The consideration of the matter was deferred till the next meeting.

New Members.

Mr. NELDER moved the election of Mr. J. Thorburn, of Okehampton, and Mr. McGowan, of Crediton, as members of the association. Mr. BOND seconded the motion, and it was carried.

The CHAIRMAN: I propose Mr. H. F. Davie, of Crediton, as a member. The motion was seconded by Mr. GIBBINGS, and carried.

The HON. SECRETARY: The rules require elections of members to be confirmed at the next meeting, but that is not now done.

Mr. NELDER, in reply to the Chairman, said it had been usual to elect members at the meetings at which they were proposed.

The HON. SECRETARY: I was going to propose that at the next meeting we revise the rules of the association, because many of them are obsolete and we don't work to them at all. I think we should have a fresh set printed.

The CHAIRMAN: I endorse that suggestion that we should have them reprinted. These are very much out of date and the names want revision.

On the suggestion of the HON. SECRETARY the CHAIRMAN directed that it be put on the agenda for discussion at the annual meeting.

Presidential Address.

Gentlemen,—I beg to thank you most heartily for electing me as your President. I feel it to be a great honour to occupy the position of President of the Western Counties Veterinary Medical Association, which, although much younger than some of the sister associations, is, I think, of considerable importance. There is an old adage that everything comes to those who wait. That, no doubt, is mainly true, but I did not in a sense wait for the honour, as it came upon me quite unexpectedly, and in accepting the responsibilities of the chair I do so under the conviction that a better president might have been found. I very much fear that I shall not be able to impart that amount of scientific vigour and energy into the association that could be desired so as to make it a great success, I shall, however, rely on my able colleagues around me, who are and have been the very bone and sinew of the association, for their support and needful assistance, and that granted I will do my little best to sustain the reputation of this association and help forward its work. The association was formed in Exeter on February 7th, 1884, and I well remember being present at its first meeting, and I think it need not be ashamed of what it has already achieved. Although not so old as most of the other veterinary medical societies, yet its record is a very fair one. Many worthy and able men have filled the position I now occupy, as well as the offices of Secretary and Treasurer, and as far as I am aware its past has been one of peace and good-will, and in some degree, I trust, of scientific advancement. The purposes for which this and kindred societies were established are of great importance and have a noble tendency. In the rules of this association I find first and foremost as the leading idea "The elevation of the profession." From this I think no one can dissent; and the second motive for the formation of the association is scarcely less in importance, namely, the establishing and promoting of a good and friendly feeling or understanding amongst its members. And if we look at the third and fourth purpose or aim of the founders of the association we have, I think, great reason to feel proud of the groundwork on which we stand. We can easily see, too, that there is ample room for our united interest and our best abilities. It is not my intention to inflict a long address on you to-day, seeing that we have our able Secretary to follow with what I am sure will be a very interesting paper, but before sitting down I would like to remark that the good resulting

from this and other societies is very evident. I look upon the body corporate as a large wheel, revolving it may be somewhat slowly, at least in the past, but still moving, and the many veterinary medical associations as smaller wheels which fit into the larger one and to a very great extent regulate and assist its progressive motion. The "elevation" of the profession! It needs elevating. I am glad to say it has risen, as perhaps no other professlon has, especially during the past twenty or twenty-five years. We are not ashamed of its past; we are in some degree proud of its present, and we are looking forward to a bright and noble future. The question springs up, how has this been accomplished? By Acts of Parliament or Government endowments? No! By the dowry of a millionaire or philanthropist? No! By the voice of a nation or command of the Throne? No! Emphatically No! By the constant perseverance, undaunted courage, and unsurpassed abilities of the noble army of professors it has had in the past. These men, our brethren in the profession—many of whom are living to-day—and many more in deeds, have been the motive power in building up what even the Government and the people and the sister profession are beginning to recognise and appreciate. We must not, however, rest on our oars. A great deal remains to be done, and will only be brought about by our untiring zeal, united effort, and scientific research. No profession or business, as far as I can see, so entirely stands or falls on its merits as does the veterinary profession. The veterinary surgeon depends solely for success and even a livelihood on his reputation; he rises or falls on this more than any other man. Don't mistake; he is not patted and caressed by the general public but criticised severely,—yes, and put down. I am often told that we are regarded as necessary evils and are not called in, except in very rare instances, until the hopeless stage. And as for opposition and competition, if the young blood on entering the profession consider their fortune made—and I am speaking from experience—they make a terrible mistake. Why, there is opposition on every hand—posters of a cure-all on almost every wall, Devonshire oils, universal oils, sun, moon, and Choppit's chest, with its gaseous fluid and famous red drench in almost every stable and farmyard. These nostrums, together with their application, and the delay caused thereby in sending for a practical man, play great havoc with our interest, and often greatly interfere with our success; so let us not suppose that the field is won and our work all done. The bright example of our forefathers stands prominently before us. May their success stimulate us to persevere in the noble calling of relieving suffering and pain in our domestic animals, and all the fascinations of the study of our profession lure us onward to dive deeper and climb higher in the labyrinths of science and in the mysteries of disease, until we shall stand on the same platform and have the same recognition as the sister profession. With your able assistance and kindly help I will do my best to foster and preserve a harmonious and friendly feeling amongst the members of this association, so that we may all have one common interest at heart, the great aim and object of our existence as a society. I do not wish it to be regarded as a trades union society, but I think if we were better banded together and studied our united interests more, our success would be greater. Depend upon it, if we do not protect and help onward our profession, its position and our success and our income will be as disappointing in the future as they have been in the past. I beg again to thank you for electing me as your president.

Pathological Specimens.

Mr. DUNSTAN exhibited two post-mortem specimens. First the skull of a horse with seven fully developed molar teeth in each upper jaw. The

presence of a fourth premolar being specially interesting as illustrating a point in tbe evolution of the horse, its absence in the modern horse being a case of specialization by suppression. The remote ancestors of the horse tribe being all possessd of a fourth premolar equally developed with the others. We occasionally find evidence of the existence of the seventh tooth in the so.called wolf's teeth, which used to be considered by the old time farriers as being productive of defective sight and consequent shying, and were accordingly drawn or punched out. The custom still survives in some parts, but is gradually falling into abeyance, with increase of knowledge.

Next was shown a scraping from the cut surface of the lung of a sheep infested with the strongylus rufesceus, shown under the microscope. The specimen was a particularly good one, displaying adult parasites, embryos, and ova in very large numbers. The worm is found occupying the air cells of the lungs, and to a less extent the smaller bronchi, was distinguished from the strongylus filaria by its much smaller size, and by its pointed tail, and by its habitat being the air cells. It is responsible for a large mortality among sheep. In reply to Mr. Harvey, Mr. Dunstan said the specimen was taken from a hog.

Mr. HARVEY: I have just had a case in a sheep a year older than you speak of. The same animal had pneumonia a year ago, and the lungs still showed remains of the old lesions, the areas in which the parasites existed a year previously being still distinctly visible. It would be interesting to know whether the strongylus rufesceus exists at the same time as the strongylus filaria in the same sheep.

Mr. GIBBINGS: These old lesions are frequently found in sheep, and they resemble the *post-mortem* lesions of tuberculosis in appearance.

Mr. DUNSTAN: The lesions produced by the strongylus rufesceus were at one time, before the discovery of Koch's bacillus, considered to be those of tuberculosis, but now we know that tuberculosis is very, very rare in sheep.

Mr. JNO. DUNSTAN here read a paper on "The Strongylus Tetracanthus," stating :—

Mr. President and Gentlemen,—By way of an apology for my appearance before you with this paper to-day, I may say that it is a matter of no little difficulty to persuade members of an association such as this to favour their fellows with an essay or paper oftener than about once in a lifetime. With my short experience of six months of the secretarial duties I find myself in a position to fully grasp the difficulties which lie in the path, and having been unsuccessful in the attempt to get a paper from elsewhere, at the request of our president, I decided to fill the gap myself, and whilst I am on the subject I would just like to say that if there are any gentlemen present who would like to honour us with a paper at our next meeting at Exeter, or at any future meetings, we would be very glad if they would kindly notify their willingness to do so either to Mr. Penhale or myself this afternoon.

The strongylus tetracanthus, the subject of my paper, is an internal parasite, as we all know, peculiar to the horse tribe, and at this season of the year, when we are brought into daily contact with its ravages, the subject should prove capable of exciting a very interesting discussion, for there is still far from being any concensus of opinion, either as to its history, habits, or treatment.

The parasite is one which I believe causes greater havoc among our equine stock than any other known worm, its presence in many instances being unsuspected and consequently overlooked. The months of November, December, and Jannary are certain to bring to many of us a very large number of cases, the greater part of them being easy of diagnosis.

It is not my intention to enter into a long diatribe on the anatomical and

physiological characters of the worm, nor do I claim that I am going to give you anything like an exhaustive treatise on the subject, or to say anything which is very new, not even in the way of treatment. What I want to do if possible is to lead the way in opening up a discussion, and with such a subject I anticipate very little difficulty in doing so. After all, one of the chief benefits to be derived from such meetings as these, which really do not occur often enough, is the enlargement of one's ideas by friendly criticism and by the exchange of opinions, and hearty discussion, which should be inseparable from such an assembly. The future of our profession depends to a large extent upon our sinking our individualities, and acting together in a body as far as possible.

I think that every case I see of the red worm, as it is now popularly called in this neighbourhood tends to strengthen my impression that if the strongylus tetracanthus, sclerostoma tetracanthum, or as it was at one time erroneously named by Cobbold the trichonema arcuata, is not actually the same parasite as the strongylus armatus or sclerostoma equinum in some not understood phase of its existence, the life histories of the two, in some unexplained way, are very closely indeed intermingled, as one seldom--I think I may safely say never—finds an animal the host of the strongylus tetracanthus, which does not harbour at least a few specimens of the armed variety. The differences mainly depended on by our greatest helminthologists are those of size and not of any distinct anatomical characteristics, with the exception of the possession by the latter variety of a boring apparatus composed of several concentric chitinous rings surrounding the circular mouth.

The Strongylus tetracanthus is usually of a very bright blood red colour, bnt may vary from almost white to a dark brownish red in the dead worms, the shade depending on the amount and condition of the blood which it contains and which it has sucked from the capillaries of the intestinal mucous membrane of its host. The body of the worm is cylindrical—tapers towards the head. The mouth is circular, with a ridge of prominent teeth, and surrounding it are six papillæ, the two lateral ones being very small in comparison with the other four, these papillæ or suckers serve as anchors by which the parasites attach themselves to the mucous membrane. The females, as is usual with nematode worms, are larger than the males, and when fully developed vary from one-half to three-quarters of an inch in length. The males vary from one-eighth to half-on-inch, probably the most common size is about a quarter of an inch.

The armed variety, *strongylus armatus*, vary considerably in colour, they may be white or varying from grey to a dark brownish red. The body is cylindrical but does not taper towards the head quite as much as in the other variety, on account of the arrangement of hard chitinous rings round the mouth and constituting the boring apparatus. The mouth is surrounded by six papillæ, as in the tethracanthus, and it carries a row of teeth in precisely the same way. Both males and females of this species are rather larger than the tethracanthus, and in the aneurisms to which they gave rise they are frequently two and even three inches long. At certain periods of their existence both species inhabit the mucous membrane of the colon and cæcum of the equidæ, chiefly the large colon, although they may nearly always be found in the small colon, and rarely in the terminal portion of the duodenum.

The life history of neither variety has ever been satisfactorily demonstrated, but there is a certain similarity in the development of all nematodes. The usual life history of a nematode worm is this: The embryo grows directly into the adult, and both live in fresh or salt water, damp earth and rotting plants. The larvæ are free in the earth, and the sexual adults are parasitic in plants or vertebrate animals. The sexual adults are free. The larvæ are parasitic in one animal, the sexual adults in another which feeds on the first.

The larvæ probably always enter in the food or water, and according to Thompson, of Edinburgh University, the young forms of strongylus armatus are swallowed from stagnant water, bore from the gut into the arteries, become adult, return to the gut, where copulation takes place, and the eggs are laid presumably in little depressions of the mucous membrane made by means of the suckers of the female. The young worms when hatched, bore their way beneath the mucons membrane, where they stay coiled up in little circles until they are fully developed and sexually mature. Then they come out again to the surface of the mucous membrane to which most of them become attached by means of their suckers. We may take it that the life histories of the two are practically speaking the same, but until the life history of the both varieties, that is, if they are really distinct, is thoroughly understood, we cannot hope to lead an attack against them in anything like a scientific manner.

It was formerly supposed that the ova of the tetracanthus were only obtained whilst the horse was at pasture, usually from some damp spot such as would be likely to afford temporary lodgings to the distoma hepaticum and strongylus filaria, and rufesceus, but I know of at least one outbreak in a stable where the horses had never been at pasture, nor had they been on any green food ; therefore, the ova must have been accidentally conveyed to them in water away from home, as the water supplied at home had come through charcoal filter beds, or else the ova must be of a tremendously resisting nature, and have been conveyed in the dried fodder. I feel quite satisfied that when once the parasite reaches the adult stage in the intestines of its host, it can increase and multiply there without the influence of any external circumstance whatever, and I have seen cases in which the parasites appear to have remained from one year to another, although no signs were visible during the summer months.

The worms appear to hatch, or at any rate the adults seem to become detached from the mucous membrane and passed with the fæces in successive crops, as frequently an animal may be seen passing large numbers to-day, then for a time, which may be a week or even more, the most diligent search fails to reveal a single one ; then without any warning the next stool may be simply swarming with them. In a very bad case, if the intestines be opened immediately after death, the whole of the mucous membrane of the colon and cæcum will appear one seething mass of worms ; not only that, but the whole of the ingesta contained therein will be in a similar condition, hundreds of thousands—I do not think I should exaggerate if I said millions of worms. And if the mucous membrane be scraped clear of them very numerous little dark coloured spots will be visible on the surface, varying in size from a small pin's head to a pea, each of these will be found, on opening by means of a scalpel, to contain a worm coiled upon itself, it may be in a very early stage of development or the full grown parasite ready to find its way to the surface.

Animals of any age may suffer. I have seen them in horses of all ages from 1 to 17 years, although it is chiefly yearly colts which suffer most. The most prominent symptoms are those of anæmia and loss of spirit. The animals affected waste flesh very rapidly, become very depressed, and hide-bound. The eyes are dull, mucous membrane of eyelids and nostrils pale, and generally of a yellowish tint. The appetite is very variable, in some cases it continues good all through, in others it is quite lost. As the disease becomes more aggravated, a very fœtid diarrhœa frequently, but by no means always, makes its appearance, and large swellings appear under the belly.

It is always advisable if suspicious of the presence of the worm, and you are unable to find any on the surface of the fæces passed, to make a careful

examination of the rectum, gently scraping the mucous membrane with the fingers. This will frequently dislodge some of them and they will be found on the hand on its withdrawal. But it is still possible that the animal may be affected badly, and yet you cannot find a single one. In that case, provided no other cause of the condition is discoverable, it is advisable to carefully watch the fæces for some days, and it may be only next day or perhaps a week or more before you succeed in finding one, although you may feel perfectly satisfied in your own mind that they are there.

Now that we know that the parasite obtains its living by sucking the blood of its host, and when we try to conceive an idea of the enormous numbers present, we cannot fail to see why the animals affected waste flesh so rapidly.

Prognosis in an advanced stage of the disease is usually considered to be very unfavourable, but if prompt measures are taken in anything like reasonable time, the percentage of deaths will be very small. Unless some complication occurs, as colic, twist, or intussusception, and these three conditions I may say are very frequently seen in tetracanthus infected horses. The old proverb, "Whilst there is life there is hope" is very applicable in strongylus infected horses, for I have seen some really remarkable recoveries. I have treated all my cases lately with carbolic acid, turpentine, and cod liver oil in milk two or three times daily, and carbonate of iron in the food, and have been very fortunate. In those cases where the horse has been off his feed I have substituted liq. ferri perchlor, and all three recovered.

No hard or fast rule can be laid down with regard to diet, as much will depend on the condition of the animal, the appetite, the amount of emaciation, and the depth of the owner's pocket, but it is essential that the food be good and carefully regulated, as success in treatment depends in the main on keeping up the strength of the patient. Milk, eggs, oatmeal, linseed, and in some cases alcohol, hay, and corn, and plenty of it in all cases where the animals can take it, and in the case of colts, unless the diarrhœa is very bad, they are better running out as long as they can be kept dry and warm, and the weather is not severe.

And now a word as to preventive measures. By far the greater proportion of these cases occur in colts running at grass, and in pastures known to be infected year after year, usually of a marshy nature. I know a field, one corner of which is very marshy and has been known to produce the disease in colts for many years. I had two cases from this same field two years ago. One died; the other got so weak that it was unable to rise by itself and had to be lifted up. It recovered, however, and is now at work. The remedy for those pastures known to be infected is not to turn any horses there, or the old-fashioned anti-parasite top dressing of lime and salt might be tried.

And now I would like to read you a few notes on several of the most interesting cases I have had lately.

Case I., December 26th.—Bay cart filly, two years old, had been losing condition for weeks, and for four days had been suffering from diarrhœa from no appreciable cause. Examination per rectum revealed no worms, although suspected, neither were any traces of worms to be found in the fæces. Thirst intense, appetite gone, slight but constant abdominal pain. Temperature 105° F., pulse 90 and weak. Gave opium, chalk, and catechu with eggs and milk; pain soon relieved, but purging continued up to time of death, on the 30th inst.

On the 29th I found two specimens of the strongylus tethracanthus in the fæces. Continued the eggs and milk and oatmeal gruel, with ol. tereb. 2 drm. doses, three times daily.

30th.—She took medicine and gruel, etc., in the morning and was left by the owner standing facing the door, on his return, ten minutes later, she was dead.

Post-mortem examination showed the mucous membrane of colour very thickly studded with little blaek spots half as large as pins' heads. Each of these spots was found, on cutting into and examination with a pocket lens, to contain an immature strongyle of a very dark-red colour, coiled on itself, and lying deeply embedded in the mucous membrane.

Embedded in and lying beneath the mucons membrane were also myriads of fully developed strongyles, varying in length from $\frac{1}{4}$ to $\frac{3}{4}$ inch, and all of a bright red colôur, very few of the parasites lying free in the intestines. The whole of the mucous membrane was of a deep claret colour. There were about two dozen calcareous nodules, varying in size from a pea to a horse bean, lying under the peritoneum, both visceral and parietal portions.

Case II. Was sent for on January 2nd, to come and see a two-year-old chestnut gelding which had been reared with patient No. 1. Found him very emaciated, nothing hardly but a skeleton in fact, but bright and cheerful, appetite good, temp. 103 F.; pulse 60 and very weak. No difficulty in finding the worms as he was passing large numbers; gave plenty of good food, with eggs, milk, and oatmeal; ol. tereb. 2 drms. twice daily, and ferri sulph. 1 drm. once daily. After about a fortnight he was getting still thinner and swollen badly under the belly, I gave him acid carbol. 15 minims, ol. morrhuæ 3 ozs. twice daily, in addition to the former medicine. He went on in this way for more than a month. and as the weather commenced to improve I turned him out to grass for about six hours a day. He soon got to weak to rise, and had to be lifted up and stayed an each side as he walked in and out, and then a change set in, and he gradnally improved, the swelling under the belly disappeared and he gradually put on flesh, and in six months he was in fair condition. This colt never lost his appetite and never had diarrhœa.

Case III.—A 17-year-old bay mare was not doing well and was losing flesh. Temp., pulse, and respirations normal; did not suspect the strongylus tetracanthus. I had her well prepared and gave her a 4-dram physic ball. Four days after I was sent for to come and see her as she was still purging; she had passed a very large number of the ascaris megalocephala. I examined the fæces, which were very fluid, but still saw no red worms. I gave her opii, chalk, and catechu, and stopped the diarrhœa for three days; then it commenced again. I examined per rectum, and on withdrawing my arm found it literally covered with red worms. I at once started the ol. tereb., acid carbol., etc. The appetite up to now was fair and continued so for 12 days longer, although she was rapidly losing flesh all the while. Then she lost her appetite, and gruel, milk, and brandy and eggs were given, but were of no avail, as two days later she died. I did not get an opportunity of making a *post-mortem*. The interesting part of this case is the age of the mare, and the fact that she had not been at pasture except for a very short time, and that on the top of a hill, where it was very dry.

Case IV.—Grey yearling colt, very emaciated. Strongyles, revealed by rectal examination, present in large numbers. Pulse and temperature normal, no purging, appetite good; gave acid carbol., ol. tereb., and cod liver oil in new milk twice daily, and ferri sulph. in the feed. Continued for nine weeks, at the end of which he was considerably improved in condition and has since gone on well.

Cases V., VI., VII.—Three yearling colts which had been reared with No. IV. They all passed the strongyles in fæces, but did not lose flesh. Gave ferri sulph. 1 dram twice daily for six weeks. All did well.

Case VIII.—Three-year-old thoroughbred mare, due to foal in two months; rapidly losing flesh, cheerful, appetite good. Temperature normal. Pulse 60 and very weak. Gave her ol. tereb. and ferri sulph. with cod liver oil and plenty of milk, eggs, and gruel, but she gradually wasted away, and seeing there was but little chance of her recovery and successfully rearing her foal,

we cast her and performed the cæsarian operation, as the owner was most anxious to have the foal if possible, although the mare still had another month before her time was up. The foal only lived for two minutes. *Post-mortem* showed the colon to be in precisely the same condition as that described for No. I.

Case IX.—Bay cob, five years, with very intense abdominal pain, which continned for thirty-six hours and terminated in death. *Post-mortem* revealed most intense enteritis and peritonitis, and colon in same state as Nos. V. and VIII,

[Mr. Dunstan showed specimens of the parasite in spirit and glycerine.]

Discussion.

The CHAIRMAN: We have been favoured by Mr. Dunstan with a very lucid paper on a very important subject, and I hope a good discussion will follow. The subject of parasites is a very interesting one to the veterinary surgeon, and this particular one is of great importance. My district is very susceptible to parasites, especially in young flocks, and last year was a very prolific season for such cases. We had plenty of colts, yearlings, and sheep attacked. Not long ago I was called to a supposed case of swine fever in a couple of pigs. When I arrived they were dead. I made a *post-mortem* examination and found the intestines full of hundreds of small brown worms, which no doubt were the cause of death. I think they were called ascaris lumbricoides.

Mr. DUNSTAN, replying to a question, said the horse whose skull he had shown was about seven or eight years old. He found the skull under a heap of bones, and did not know the animal's history.

Mr. GIBBINGS: I wish to congratulate Mr. Dunstan on his practical and instructive paper. Last year I had several colts attacked, and I cannot claim to have been so successful as he appears to have been. When purging commenced I found a large percentage of the cases fatal. I tried the recognised anthelmintics, but not with a great deal of success. Possibly it may have been that the doses I administered were too large. I see he recommends two drachms of turpentine. I usually gave an ounce. I have thought that if the medicine could be injected very possibly we might get better results, because it would not then be mixed with the food or diluted with intestinal secretions and gastric juice, and would be more likely to cause the death of the parasite. I agree that colts, when suffering from these parasites, do better at grass, especially in the spring of the year. I recollect the case of one in a very emaciated condition, which had to be assisted to rise when down. The owner turned him into a field where there was a good crop of grass, and to my astonishment he made recovery. I think when diarrhœa commences the best thing is to assist the powers of nature by giving eggs and gruel, and to keep an eye on the other colts. They should be always drenched and receive a plentiful supply of good food.

Mr. HARVEY: I am very much pleased with the paper. I get a good deal of this disease, and I agree that generally the doses we give are too large. I think if turpentine is any good at all, it is when given in small doses, to enable the mucous membranes to eliminate the turpentine, and get into a good healthy condition. But I don't see that medicines do much good. I think that the treatment of the disease from the dietetic point of view is more important than any other. Mr. Shipley, of Yarmouth, a short time ago, I think, recommended carbolic. I think large doses do more harm than good. Under certain conditions, if you give a horse aloes or any purgative, it is likely enough that you will produce what is called a catastrophe of medicine, and a case that might have outlived the worm attack, will terminate fatally. The worm seems to leave the bowels in swarms. Although many cases recover, I do not think it is due so much to medicine as to nursing, and

care taken with the animal's food when under treatment. It is necessary, I have found, that the fæces should be examined fresh. It is remarkable the rapidity with which worms disappear. You can't see them after an hour or two.

Mr. BOND: We have to thank Mr. Dunstan for a very interesting paper. It is very timely, for there has been a great deal of this among colts and young stock. Farmers around here have suffered most cruelly. Last year there was not much grass, and colts then got low. I think this accounts for the great mortality. I believe that in some big horses there was not an ounce of fat left in the whole system. I gave exsicated sulphate of iron in fine oatmeal, mixed with their food. I noticed that the appetite kept up sometimes until the day the colt died. They would have to be lifted up, and would then eat like horses that had been starving. There was no difficulty in getting specimens of the worm at any visit you made, if the droppings were examined fresh. I have not heard of so much during the last ten months. There has been more grass and better keep, and the animals have therefore been in a much better state to withstand the inroads of disease. I did not find turpentine as good as sulphate of iron.

Mr. HARVEY: Drugs very often spoil the appetite and hasten death, I think

Mr. BOND: No good at all. At one farm that had the biggest loss the parasite was derived from water-drinking, not pasture.

Mr. BLOYLE: There can be no doubt that many of the cases which some years ago were treated as pernicious anæmia were attacks of parasites. It has not been till a comparatively recent date that this parasite has received anything like the attention that it deserved. That its ravages have been severe ane that they have existed for a very long time there can be no doubt about. Mr. Harvey anticipated what I was going to say with rgard to the use of medicines. I believe anthelmintics are absolutely useless and in some cases, if irritant, harmful. I have found that, in nine cases out of ten that have recovered, the only medicine that has been of any real service has been the medicine that has temporarily relieved diarrhœa. If diarrhœa has been allowed to continue the animal has become so terribly weak that nothing could be of service. I have found that keeping up the strength and by relieving diarrhœa medicine has been of some help. I think Mr. Dunstan is to be congratulated on his pluck in bringing forward the subject of parasites, particularly as it now exhibits more than an ordinary amount of interest for us. Bacteria, which, if one may say so, are only one degree lower down in the animal scale, are receiving such a large amount of attention that perhaps the somewhat physically larger subjects of ordinary internal parasitism are apt to be neglected.

Mr. COLLINGS: I wish to endorse the opinions expressed as to the non-use of medicines. I find I have had much greater success since I left them off and stuck to cod liver oil and milk. I have one that is just getting fit now. He has been out to grass for some months. I find it takes six months before they can get into any condition if they get low. The best thing is to keep up their strength as best you can, and wait till the grass comes.

Mr. HARVEY: A short time ago I had a fatal result after castration. The horse had been used two seasons for stud purposes, and was turned out into a low kind of meadow or moor in order to get into condition for castration. The horse took hardly any notice of the operation, but a fortnight or more afterwards he went off his feed and bled frequently. Then diarrhœa set in, and I saw he was likely to die. I saw some specimens of strongylus tetracanthus from the rectum. I believe a colt should not be operated on for castration if you suspect these parasites.

Mr. GIBBINGS: I believe a good many are operated on when so affected.

Mr. DUNSTAN: I quite agree as to a plentiful supply of good food. I believe that to be the chief thing to be studied; but I must say I certainly have some faith in medicines. I don't think turpentine should be used in large doses, certainly not more than 2 drachms, with 15 mins. of carbolic twice daily.

Mr. BOYLE: The carbolic has a very good effect as an astringent.

At the close of the meeting the members dined together.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE annual meeting was held at the Queen's Hotel, Leeds, on Friday, October 29th. Mr. G. Whitehead, of Batley (president), presided, and there was a very large attendance of members, including Messrs. J. Abson, Sheffield; J. Atcherly, Harrogate; H. G. Bowes, G. E. Bowman, J. Brand, Leeds; J. S. Carter, Bradford; J. Clarkson, Garforth; S. Chambers, Kirkeaton; J. Cooke, Scarboro'; F. W. Clough, Morley; P. Deighton, Selby; T. Fletcher, Sheffield; W. F. Greenhalgh, Leeds; F. Halliday, Dewsbury; A. W. Mason, Leeds; E. H. Pratt, Northallerton; G. T. Pickering, Scarboro'; H. Pollard, Wakefield; J. E. Scriven, Tadcaster (hon. treasurer), F. Somers, Leeds; H. Snarry, York; C. S. Smith, Barnsley; S. Wharam, Leeds; J. Macarthur, R. C. Thompson, Doncaster; and A. McCarmick, Leeds (hon. secretary).

Among the visitors present were Messrs. A. W. Lane, Leeds; E. Faulkner, Manchester; J. McKinna, Huddersfield; W. Woods, Wigan; J. J. Bell, Carlisle; J. T. King, Southern Counties; F. Garnett, Windermere; J. H. Carter, Burnley; Wm. Shipley, junr., Great Yarmouth; W. F. Wright and J. Dollar, London.

The HON. SECRETARY announced the receipt of letters of regret at inability to be present from Professors J. McFadyean, Pritchard, and Penberthy.

Nominations.

The HON. SECRETARY nominated Mr. Robert White, of Wakefield, as a member of the society.

Financial.

The HON. TREASURER presented his annual financial statement, which was adopted, on the motion of Mr. GREENHALGH, and seconded by Mr. FLETCHER.

A discussion took place with reference to arrears of subscriptions, and Mr. BOWMAN gave notice of his intention to move at the next meeting that in the case of a member not having paid his subscription for four years, his name should be struck off the list of membership of the society.

The Presidency.

Mr. WHARAM said he had great pleasure in proposing that Mr. A. W. Mason be the president for 1898. Mr. Mason had already been chosen President of the National Veterinary Society, whose next annual meeting took place at Scarboro' in the summer, and the Yorkshire Association no doubt would have to take a prominent part in connection with that gathering. Probably the North Yorkshire would join, but in any case he thought their position would be secure in the hands of the gentleman whose name he now submitted to the meeting. He thought that on previous occasions where the

dual offices had been filled by one gentleman it had worked satisfactorily. There were no doubt other gentlemen whose claims for the presidency of the Yorkshire Association merited consideration, but under the special circumstances of the forthcoming year he begged to move the election of Mr. Mason.

Mr. FRANK SOMERS said that under the exceptional circumstances mentioned by Mr. Wharam he seconded the proposal. It would, he added, be necessary for the two societies to join.

Mr. PICKERING proposed as an amendment the name of Mr. Greenhalgh, who, he observed, was an old member and had rendered much useful service to the Society as secretary.

Mr. BRAND, in seconding, expressed the opinion that as president of the National Society Mr. Mason would do all in his power for the success of the Scarboro' meeting and for the Yorkshire Association, but that it would be advisable to keep the two offices distinct.

Mr. FLETCHER supported Mr. Greenhalgh's nomination for the reasons that he thought Mr. Mason would have plenty of work to do in connection with the National Association, and that if Mr. Greenhalgh filled the presidency of the Yorkshire Society in the same way as he for so long discharged the secretarial work, he would be of the greatest assistance to Mr. Mason.

Election of Officers.

The PRESIDENT, before taking a vote, said it was rather an unfortunate circumstance to have two gentlemen nominated for the presidency, but he hoped no member would remain neutral when the vote was taken.

The voting, which was by ballot, resulted in the carrying of the amendment by a majority of one. Afterwards Mr. Greenhalgh was unanimously elected.

Mr. GREENHALGH, in acknowleding his election, said he should endeavour to do his best for the Society, more especially in a year when the National Society was coming to Yorkshire. He and Mr. Mason were very old friends and had always worked well together, and he had no doubt they would do the same in the ensuing year. He could uot thank them too much for the honour which they had conferred upon him ; he asked them for their sympathy during his year of office. He knew that he should have the assistance of the executive and he asked for the support of all the members.

On the motion of Mr. PICKERING, and seconded by the SECRETARY, Mr. Wharam was elected a vice-president. Mr. Cooke was also appointed as a vice-president, the resolution being moved by Mr. SCRIVEN and seconded by Mr. CLARKSON. The retiring president (Mr. Whitehead) also becomes a vice-president.

Mr. GREENHALGH proposed, and Mr. WHARAM seconded, the re-election of Mr. Scriven as treasurer, and the resolution was unanimously adopted.

On the proposition of Mr. SCRIVEN, and seconded by Mr. SOMERS, Mr. McCarmick was again invited to fill the office of secretary.

Messrs. A. W. Mason and McCarmick were re-appointed as auditors.

Abandonment of the Summer Meeting.

The PRESIDENT intimated that the next business was the consideration of the motion of which Mr. Scriven had given notice, to discontinue holding the summer meeting of the Society. He did not know that he had anything to say about the matter except that for the last four years the average attendance at the summer meeting had been about 11.

Mr. SCRIVEN said the reason for the motion was that mentioned by the President—the bad attendance at the summer meeting, owing to members of

the Society being on holidays or engaged at shows in their districts. At the last meeting there were only five members present. He proposed that the summer meeting should be abandoned.

Mr. GREENHALGH seconded, and Mr. COOKE supported.

Mr. WHARAM suggested whether it would be possible to make the summer meeting more attractive.

Mr. FLETCHER thought they would be justified in abandoning this particular meeting.

The PRESIDENT, in reply to Mr. Wharam's observation, said that when the summer meeting was held at Scarboro' two or three years ago there were only 14 or 15 members present. Theirs was not the only society whose summer meeting was poorly attended.

The resolution was then submitted to the meeting and carried.

The Curing of Quittor.

Mr. FLETCHER brought forward the question of the curing of quittor. He remarked that for the last six months he had adopted the method of pure carbolic acid to quittor with the greatest success. If he could learn anything about this treatment from members he should be pleased to do so. He took his cue from *The British Medical Journal*, which he read a great deal, and from which he gained information. He injected it about twice in a week for a time or two, and then perhaps go a fortnight or three weeks without any dressing. He used a brass quittor syringe.

Mr. PICKERING said he had had numbers of cases of quittor, for which he had tried the application of the most powerful caustics and antiseptics, but he had had cases where they were no use. They must get to the bottom of the wound. He had had cases where the lateral cartilage was diseased. He had had to remove all the diseased cartilage and necrosed parts. Then he had applied strong caustics such as chloride of zinc, butter of antimony, and soluble phenyl. He had had a case which an empiric had been treating for over two months, and could not cure. He had to cast the mare, remove the cartilage, dress the wound with strong caustics and then apply tow and a bandage very firmly over the foot, and did not remove it for about a week, when the parts were thoroughly cleansed and dressed with antiseptics, etc., and placed the foot in a leather boot, with a good soul to keep out the damp and dirt. The case did well and was completely cured, but the hoof did not grow for some months.

The PRESIDENT observed that if Mr. Fletcher's treatment was successful, his advice was to continue it.

Mr. FLETCHER said that sometimes he was accused at home of having whims, but he found that some of the whims stood out. Cases as bad as he had ever treated had yielded splendidly to it and he should continue to try it.

Mr. CLARKSON said that if he had a but himself he always touched it with pure carbolic acid.

Mr. CHAMBERS then mentioned a case which he recently had. It was that of an aged cart mare, which to the owner showed symptoms of diseased teeth. The owner sent her to a forge to have the teeth rasped. The next day he (Mr. Chambers) was asked to examine the mouth, and he did so, but could not find any abrasion. The following morning he received notice to attend to the animal at once. When he got there he found that the tongue was protruding from the mouth and the cheeks were very much swollen. Had he not seen the animal the night before he could scarcely have imagined such a case. He ordered fomentations and poulticing, and eventually there was suppuration. There was nothing wrong with the pulse or the temperature that he had detected. In a day or two there was a smell from the right

nostril. He told the owner that he thought the mare would die, and she did. The mare was a good worker, though 20 years of age. The *post-mortem* showed that the left lung was perfectly healthy, and the right lung was in the same condition, excepting a portion about twice as large as his hand. He formed the opinion that it was the septic material from the head which had been deposited in the lung.

The PRESIDENT: There is no question about it being a case of blood poisoning. The point is, what was the cause?

Mr. LANE: Was there any past history?

Mr. CHAMBERS: None beyond what I have told you. My opinion is that it was caused at the blacksmith's shop. The owner was perfectly satisfied with what I had done.

Mr. CLOUGH (Morley) also mentioned the case of a two-year-old filly which showed similar symptoms to those described by Mr. Chambers.

Blood Diseases.

Principal Williams, of the New Veterinary College, Edinburgh, contributed a paper on "Some Blood Diseases." In the course of his address he said:—It is my intention to describe some blood diseases which are due to ordinarily non-contagious facultative parasites—that is to say, parasites which become infective by inoculation in suitable soils. The most deadly of these are the *vibrio septicus* of Pasteur; the pyogenic bacteria, especially the streptococci, some of which are sufficiently virulent to persons the most healthy; generally, however, the animal body whilst in a state of health, is not affected by them, unless, indeed, they are very numerous. Septic diseases are induced in two ways:—1st, by the entrance of the organisms themselves into the general circulation (septicæmia), in which case the symptoms and results are not proportionate to the dose, that is to say, fatal results may follow a very small dose; and, secondly, by entrance of the microbic products—ptomaines—only (sapremia) in which the symptoms are proportionate to the dose; if the dose be large, the results may be immediately fatal; if small, it is soon excreted, and having no reproductive powers, the effect soon passes off. These organisms in their normal condition exist in external media, and only induce disease under circumstances which have rendered the animal-body susceptible to the morbific effects of themselves or their ptomaines. For example, the body whilst in a state of health, can generally resist the bacteria, unless they are numerous; but when an organ or tissue is injured—as in a wound—or diseased, and is exposed to the influence of such germs, they, or their products, overcome the resistance of the injured or diseased structures, penetrate the blood stream, and give rise to grave disturbances or even death. In proof of this I may refer to the experiment of Burdon Sanderson and others, who found that putrefactive fluids injected into the healthy peritoneal cavities of guinea pigs had no ill effects, but when the peritoneum was irritated by an injection of some irritant, such as mustard and water, the microbes in the putrefactive fluids penetrated the irritated membrane, inducing general septicæmia with rapidly fatal results. Here we have an example of the natural resisting power of the healthy membrane so weakened or destroyed as to be unable to repel the entrance of the microbes and their ptomaines. My experience leads me to conclude that when septic matters are of vegetable origin, although abundant, are seldom injurious, particularly if they have been exposed to sunlight and a plentiful supply of air—at least so far as the domesticated animals are concerned, but when they are of animal origin, cadaveric alkaloids, human ordure, or other decomposing animal fluids and solids, such as milk, blood, or flesh, such contaminations give rise to disastrous results. I am sure that many here have seen cattle

standing in ponds during the heat of summer, polluting the water with their excreta, drinking it freely, although in appearance it may resemble a green-coloured porridge more than water. Yet these take no harm; indeed, they seem to thrive on it. If such water be examined microscopically, it will be found to be swarming in organisms of various kinds. If, however, such water contain the product of the decomposition of animal matters, even when sunlight and air are abundant, there will be a repulsive odour, and unless forced by thirst animals will not drink it. If, however, no other water is obtainable, and they are thus forced to drink it, the consequences are very prejudicial, the animals become emaciated, unthrifty, hide-bound, often have diarrhœa, with irritation of the bronchial mucous membrane, causing cough, and if the water be not changed death may result. In some instances, and when the source of contamination is abundant, the animals may rapidly succumb to gastro-enteritis, with colliquative diarrhœa, great prostration with high fever; temperature 106 or 107, or more, and other signs of putrid intoxication arising from the absorption of the microbes or of the cadaveric ptomaines. But when the source of infection is less abundant lung lesions are more evident than the intestinal. This is important to remember. If, however, vegetable putrefaction occurs in leaky, liquid manure tanks which exclude the sunlight, escape and contaminate drinking water, their effects are quite as disastrous as those emanating from animal sources. An endeavour has been made to explain this on the ground that the algæ and other vegetations of low origin which grow abundantly on ponds exposed to air and sunshine, destroy the virulent organisms or produce anti-ptomaines which overcome the virulence by breaking down the toxic materials into simpler forms—ammonia and so on. It is difficult to conceive a general septicæmia without the actual presence of the microbes in the circulation, and undoubtedly, in many of the most fatal forms, the organisms are existent in the blood, and the introduction of such blood into the body of a healthy animal may induce the same form of pathological changes. As a rule, however, the blood does not seem to be a suitable medium for their development and growth, and they soon disappear from it; being anœrobic, are destroyed by the oxygen, or are arrested in the capillaries of the liver, spleen, kidneys, and are there quickly destroyed. Their virulence is thus overcome, and the disease is not transmitted from one animal to another. In many cases, however, the germs remain external to the circulation, and act solely through their products, which gain entrance into the circulation, and produce their virulent effects. This is termed septic poisoning, an example of which is seen in tetanus. In many instances these microbes, or their products, gain entrance from without, traumatic septicæmia, etc., but there are others, which are always existent, found within the body itself, such, for example, as those present in the intestines, and may, under certain conditions, give rise to local disturbances of a grave or even fatal nature. The intestinal mucous membrane, always in contact with decomposing materials, has the power, while free from disease, of excluding them from entrance into the circulation, but when it is initiated in any way by any cause, it not infrequently loses the power of exclusion, and the ptomaines, gaseous products, etc., instead of being eliminated, gain entrance into the blood, inducing high fever, local inflammation, and even death. I think that this is the reason why laminitis in the horse is such a frequent concomitant of bowel affections, even a slight irritation such as that arising from the action of a moderate purgative administered while the animal is in perfect health, being not infrequently sufficient to induce inflammation of the feet. This conclusion is supported by the fact that laminitis is an occasional concomitant of flatulent colic, of septic metritis, and of broncho-pneumonia, when the catarrhal products

have been retained in the tubes and there putrefy. Reasoning upon this conclusion, I now treat the so-called metastatic laminitis associated with bowel irritation, with antiseptics that act directly upon the bowel contents, such as hypo-sulphite of soda, and I must say, with gratifying results. Again it may be stated, that the sudden deaths characteristic of what is called braxy in sheep are due more to the rapid decomposition and absorption of the products arising from the rapid putrified fermentation of food eaten while in a state of partial decomposition, than with the tympany by which braxy is generally recognised. Intestinal septicæmia, known to supervene upon a number of conditions, such as insufficiency of gastric juice, which neutralise the majority of the germs which pass through the stomach. In order to understand this more clearly, I have ventured upon the following arrangement :—(*a*) where the products (ptomaines) only are observed, and (*b*) where the microbes themselves, as well as their products, gain entrance into the circulation, and there increase and multiply.

Under the first head may be included (1) traumatic fever, which is the mildest form of septicæmia, and in which there is a sudden but moderate elevation of temperature, from two to four degrees, but as soon as the shock has passed off there is no further constitutional disturbance, unless there be some complication.

(2) Malignant œdema (Koch), gangrenous septicæmia (Pasteur) is caused by the small sporogenous œdema bacilli, called *vibrio septicus* by Pasteur, which exists in large numbers, particularly in the upper layers of the soil, and infection is easily induced by subcutaneous tissue inoculation, but not by intravenous injection, and when applied to superficial scratches on the skin, the microbes, being anæbotic, are killed by the oxygen, and granulating tissue forms an insuperable barrier. Kitt states that he has induced disease in calves, as well as in the guinea-pig, goat, sheep, dog, horse, fowls, and pigeons, and states that these bacilli are probably the cause of several diseases in cattle, such as septic metritis; progressive inflammation of connective tissue, etc. These bacilli are but little affected by antiseptics, but are killed by boiling and by a dry temperature of 250 F., and Cornevin states that by the continuous action of heat and antiseptics he has obtained a vaccine which confers a safe immunity against septicæmia. I need not, however, dwell further upon these perhaps uninteresting matters, but before concluding I wish to direct your attention to a form of anæmia termed surra in India, due to the presence in the blood of hæmatozoa, called Hæmatomonas Evansi, after its discoverer, Evans, of the Army Veterinary Department. This parasite is very active in its movements, with an undulating, eel-like motion, moving generally with head foremost, but occasionally in the direction of the tail lash, tugging and worrying at a red corpuscle; they thus attack and disintegrate the red corpuscles, and induce a pernicious and fatal anæmia. The disease is not contagious or infectious in the ordinary sense, but can be transmitted by the subcutaneous injection, and introduction of blood containing the parasite into the stomach. Again, you are aware that during last year I had the opportunity of studying a form of disease which was committing havoc among the cattle in Jamaica, and in which an organism was formed most closely resembling that of Evans in at least one of its stages. (Principal Williams then showed micro-photographs illustrating the parasite in all its stages, in the last of which it bears the closest resemblance to that found in surra). There is, pointed out Mr. Williams, this remarkable difference, that while in India we had no evidence that the disease attacks cattle, in Jamaica it seems to attack cattle only, and that the proof is positive that it is communicated by ticks. No mention is made of ticks in the Indian Reports, but a condition of the skin is described as resembling what is observed as a first sign of the

infection in Jamaica, and due to the invasion of the ticks, characterised by a rapid diminution of the red corpuscles.

On the motion of Mr. COOKE, and seconded by Mr. FLETCHER, it was decided to adjourn the discussion till the next meeting.

Principal WILLIAMS was thanked for his paper, the resolution being proposed by the PRESIDENT, and seconded by Mr. GREENHALGH.

The proceedings closed with a hearty vote of thanks to the President for his able services during the past year. The resolution was submitted and seconded in appropriate language by Mr. A. W. MASON and Mr. SCRIVEN respectively.

The PRESIDENT suitably replied.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE Quarterly Meeting of the above was held at the Grand Hotel, Manchester, on Thursday, September 30th, 1897.

Tea 5 p.m. Business 6 p.m. Present: the President, J. H. Carter, Esq., in the chair; and about thirty members and friends.

The SECRETARY announced letters of apology for absence from Professors Macfadyean, Penberthy, Williams, W. O. Williams; and Messrs. A. Lawson, Joseph Abson, S. Locke, R. Hughes, G. Gartside Mayor, and George Howe.

Mr. T. Eaton Jones, M.R.C.V.S., of Liverpool, was duly elected a member of the Association on the proposition of Mr. EDWARDS and seconded by Mr. WOODS.

It was proposed by Mr. LAITHWOOD and seconded by Mr. DARWELL, that Mr. Robert Stafford, M.R.C.V.S., of Crewe, be elected a member of the Society.

Nominations for Membership.

The PRESIDENT nominated: Mr. John Rogerson, M.R.C.V.S., Blackburn; Mr. Charles Ward, M.R.C.V.S., Lancaster; Mr. Joseph Kendall, M.R.C.V.S., Barrow-in-Furness; and Mr. Joseph J. Potter Carter, M.R.C.V.S., Liverpool.

Mr. LAITHWOOD nominated: Mr. Richard Barker, M.R.C.V.S., Middlewich.

Mr. W. A. TAYLOR nominated: Mr. B. Sumner, M.R.C.V.S., 20, Hatton Garden, Liverpool.

The SECRETARY, who reported the receipt of a communication from the Central Veterinary Medical Society respecting the proposed "Victoria Veterinary Benevolent Fund," in commemoration of Her Majesty's Diamond Jubilee, explained that at a special meeting, July 20th, of the members called to consider the subject, it was resolved to reply to the C.V.M.S. to the effect that while in entire sympathy with the objects of the suggested fund they failed to see its advantages over the National Benevolent and Defence Association in which a good many members of the Lancashire Association were enrolled.

The PRESIDENT thanked the members for the admirable support he received at the recent election of Council, and assured them that he would endeavour to fulfil with satisfaction the duties placed upon him.

Mr. EDWARDS (Chester) exhibited specimens of the last cervical and first dorsal bones of a horse which was destroyed on account of its inability to get its head to the floorto eat. In his opinion there had been a fracture.

Mr. WOLSTENHOLME made a communication on the subject of "Lathyrus Sativus" with special reference to the question as to whether it was a "pea"

or a "vetch," quoting several historical facts in connection with its use, also exhibiting several fresh specimens of the plant.

Mr. SUMNER submitted a specimen of nine calculi taken from the right kidney of a black spaniel dog.

Professor HOBDAY showed specimens of the skull of a cat that had an osseous tumour, which obstructed the sight; of the jaw-bone of another that had ostitis and periostitis of three kidneys, each having a large stone embedded in the pelvis. The first kidney was from an eight-year-old terrier, which was treated by its owner for rheumatism. It, however, died suddenly, and on *post-mortem* a calculus was found. The other two kidneys, he thought, were particularly interesting, because they came from a couple of terriers belonging to the same owner and within a short time of each other. Until near death there was no suspicion of stone in the kidney or of anything wrong with the latter. He then gave an exhaustive and instructive paper on some canine and feline surgical operations, showing many of the modern operations which are possible to the lower animals—such as amputation of limbs, ovariotomy, cæsarian section, removal of foreign bodies from the intestinal tract, etc., etc.

The paper was followed by the professor's performing the operation of speying.

Discussion.

The PRESIDENT said he appreciated Professor Hobday's kindness in consenting to read the paper, which he thought was full of interest and practical importance to veterinary surgeons.

Mr. WOLSTENHOLME said he was delighted with the excellent surgical paper given by Professor Hobday, and with the splendid manner in which he manipulated the operation of speying.

Mr. MCKENNA thanked Professor Hobday for his interesting paper and demonstration of canine surgery, adding that he was indebted to him for the valuable hint on the use of collodion and iodoform paste, which he thought was a great boon in veterinary surgery. The operation of speying on the dead animal was very instructive, and naturally he would like to have seen it performed on the living animal. Though as yet he had not done any speying, he would do it without hesitation.

The SECRETARY thanked Professor Hobday for his valuable paper and spoke highly of his method of fixing the patient and manner of administering the chloroform. Though he could not say that the professor's treatment of hæmatoma of the earlap was altogether new, the after application of wadding and bandaging was, of course, entirely new and, in his opinion, would add greatly to the success of the operation. But for the bandging he did not think the stitches would have the same effect. His treatment had always been injecting tincture of iodine, making a fair incision inside, and not allowing it to heal too rapidly. He thought he would try in future the operation of ovariotomy.

Mr. HARRISON (Bowdon) expressed his obligation to Professor Hobday for his able paper. Referring to the Secretary's remarks, he had occasionally got sloughing of the cartilage of the ear, but he thought the best treatment was to sever the underneath part of the skin from end to end, to keep it well open, and remove all the fluid from the loose tissue. The other operations mentioned by the professor were very interesting and frequently brought a lot of credit to the practitioners.

Mr. STENT remarked that he had learned a great deal from Professor Hobday's able paper. He was much struck with the operation for hœmatoma of the earflap, which was a very troublesome thing at times. He thought that the skin and cartilage became united by granulation, and therefore the pressure of bringing them together brought it about. The dry dressing of

iodoform and collodion he would use, and the idea of sutures and bandages was very good and he should certainly try it. Though he had never performed the operation of speying, he would try it. Was it not possible, he asked Professor Hobday, to destroy dogs by chloroform much quicker than by prussic acid?

Mr. LAITHWOOD said he was sure the thanks of the whole meeting were due to Professor Hobday for the valuable information which he had given them. He (Mr. Laithwood) had not a great amount of dog practice, but once, some fifteen years ago, he attempted cæsarian section, the animal, though almost *in extremis* when brought to the surgery, recovering completely. He was much pleased with the professor's operation, and would certainly try it on the first opportunity.

Mr. WOODS (Wigan) said his practice amongst the lower animals was not very large, but he agreed with Professor Hobday that it was lucrative to those who cared to devote their time to it. The operations demanded time and patience, and the professor was painstaking and accurate in his observations. Mr. Woods questioned him as to the use of cocaine on the lower animals. He had not used it on dogs, but on horses he had seen distinctly poisonous effects from its injection; for example, in firing hocks. Excision of the membrane nictitans he had performed very often. In the operation on the eyelid for entropian, the difficulty was in keeping the animal from opening the wound. His few amputations had been of one leg, never two. Though he had never performed amputation of the rectum in a dog, he had in pigs, once successfully, and in a horse, quite successfully. With the exception of the cæsarian section, abdominal surgery was new to him. He had never performed cæsarian section successfully. Perhaps this was due to a certain amount of exhaustion on the part of the patient. He had seen cæsarian section operation cases successful, though an absolute failure with him.

Mr. GARNETT (Windermere) thanked Professor Hobday for his excellent paper, adding that he had performed some of the operations described, but in a very rough and ready manner. Dogs he had chloroformed, and done the cæsarian section, but in some five cases there was only one recovery, and his experience was that the majority of cases died from two to three hours after the operation. With regard to pugs, he had been nervous when chloroforming these, as out of three or four which he had done, two collapsed suddenly without any apparent cause. He would like to know from the Professor whether it was due to any special peculiarity of the pugs to withstand chloroform badly, or whether it was simply on account of the amount of fat which is found over the animal's body. He had often treated protrusion of the rectum in pigs, but he never had a case where it had needed the entire removal of the rectum. His treatment was anointing the bowels with opium and olive oil. The pigs became entirely under the effects of the opium when applied this way, far more so than when it was given by the mouth into the stomach.

Mr. PACKMAN said he was glad that he had not missed listening to Professor Hobday's paper, which was an intellectual treat. He had performed ovariotomy on pigs, calves (about six weeks old), and older heifers. He had tried Mr. Garnett's treatment for everted rectum, viz., the application of olive oil and opium, but he could not say that he had much success, as he had found straining, with the result that the whole trouble had recurred, and, finally, the knife had to be resorted to.

The PRESIDENT also thanked Professor Hobday for his valuable paper, from which they had gained a lesson.

Mr. FAULKNER proposed a vote of thanks to Professor Hobday for his kindness in coming amongst them and delivering such an interesting and instructive paper.

Mr. HARRISON seconded the proposition, which was carried unanimously.

Mr. WOODS proposed that a vote of condolence be sent to the family of the late Mr. Findlay Dun.

Mr. WOLSTENHOLME seconded.

Mr. FAULKNER supported, and the proposition was carried.

The PRESIDENT proposed a vote of thanks to Messrs. Edwards, Faulkner, and Sumner, for their pathological specimens.

Mr. ALLEN seconded.

Professor HOBDAY, alluding to Mr. McKenna's remarks, said he did not want to claim any originality for collodion and iodoform paste. For a long time it had been used in human practice. It was not a specific for all wounds —while it answered well for a fresh wound it was not so good for an old one; moreover, the wound must be perfectly dry. He did not think the idea of bandaging mentioned by the Secretary was new, though it opposed the teaching and ideas of the practitioner. He would always apply the bandaging unless there was some good reason for not doing so. He quite agreed with Mr. Harrison regarding the treatment of hœmatoma of the earflap so far as making a good long incision, but he liked the sutures best. Replying to Mr. Stent, he had tried chloroform injected up the nostril in 13 or 14 cases, but the results were unsuccessful, and he should never adopt it. Dogs objected to the syringe being inserted, and if adopted in the case of a dog with discharge from the nose it would be difficult to get it right up the nostril. With prussic acid there was certainty of immediate death—not so with chloroform. Several times he had performed cæsarian section mentioned by Mr. Laithwood, but in some cases the animals had been too weak to survive it, while others died under the operation. Answering Mr. Wood as to the action of cocaine, it was certainly quite easy to kill almost any animal with a very minute dose of cocaine, as the members would have observed from his experiments which were recorded in the *Journal of Comparative Pathology*. The dog which had both legs amputated on account of a compound comminuted fracture of each ulna and radius, caused through the animal having been tumbled out of a window, was an exceptionally good case, though it was a vicious one to deal with. Referring to Mr. Garnett's remarks with respect to chloroforming pugs, they required greater care than other dogs, and so did bull dogs if they were very fat. If it was a valuable dog he generally preferred to use ether or ace mixture. The difficulty was due to the shape of the nose. With pugs, as a rule, he did not put the muzzle on, but allowed them to have as much air as possible, and allowed the nostrils free play. As to the treatment for everted rectum, he could not say that he had tried opium and olive oil, but he would certainly try it. He could not recollect ever having had a case of amputation of the rectum in other animals than the dog and the cat. In reply to Mr. Hall, regarding the formation of pus in the abdominal cavity and its treatment, simply a few stitches were removed—in some cases all the stitches—pass in small pieces of dry antiseptic wadding with forceps, clean the edges of the wound thoroughly, and in some cases syringe small quantities of lukewarm antiseptic, and swab out the wound and suture up again.

SOUTHERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

A MEETING was held at the Royal Hotel, Southampton, on Thursday, the 28th ult. Present, Messrs. J. T. King, president, Tutt, Barford, Hall, Carter, Pack, hon. sec., and others.

Letters regretting their inability to attend were read from Sir H. Simpson, Professor Pritchard, Messrs. J. F. Simpson, E. W. Baker, and others.

Prior to the meeting the members repaired to the surgery of Mr. Hall, M.R.C.V.S., where Professor Hobday gave a practical demonstration of the surgical reduction of umbilical hernia and also of double oöphorectomy, chloroform being used as the anæsthetic in each case. The hernia patient was a dog about ten months old, the operation being performed in the manner afterwards described. The herniated organ proved to be a piece of omentum.

Morbid Specimens Shewn.

Professor Hobday had brought two specimens for exhibition before the meeting, the first being the lower end of a large sheep's femur removed by the operation of œsophagotomy from a bull dog's throat, and the second an aged Schipperke dog with a complete set of false teeth. With reference to the first specimen, attempts had been made for three days by the veterinary surgeon in attendance on the case before consultation was decided upon. All efforts to remove the piece of bone by forceps, probang, lubricants, etc., having proved futile, œsophagotomy was performed, the wound being now almost healed and the animal making a good recovery.

The dog with the set of false teeth excited a considerable amount of interest. The animal, an aged Schipperke, belongs to Mr. Edward Moseley, an eminent Regent Street dentist, and well known breeder and judge of Schipperkes. All the teeth were false with the exception of four canines and four molars, and were fixed in the mouth on a plate in the ordinary way. Before the teeth were inserted the animal had been fed solely upon minced or finely cut meat; since the insertion of the teeth he had been able to pick and crunch a bone with ease, and had gained considerably in body weight.

Professor Hobday here read his paper on "Hernia in the Dog and Cat," as follows:—

Mr. President and Gentlemen,—When asked about a fortnight ago to read a paper before your Society it was with a great deal of diffidence that I consented, because I felt that the time was short and that it was almost impossible to prepare one which would be worth bringing under your notice. However, I was aided in my selection of a title by the kind assurance of your Secretary that something practical in canine surgery which would allow of the demonstration of an operation would be perhaps more acceptable than anything else, and by a strange good chance I have had brought under my notice during the past few days two very good typical specimens of patients suffering from hernia, one being inguinal and the other umbilical. These I have brought down with me to-day, and upon one of them you have just seen reduction surgically performed.

Hernia is a condition not uncommonly met with in the dog and cat, and one for which I have frequently heard the opinion given that nothing can be done, and I have even seen a dose of poison administered in order to end life. Our canine text-books do not give particularly good accounts of its treatment, and whilst some of them do not allude to it at all others casually mention the umbilical form, stating that this is the only one met with and that it is of a very insignificant character.

In a large canine clinique hernia in all its forms is not such a rarity as may be supposed, and its treatment surgically is not accompanied by any excessive amount of skill or risk. I do not mean to infer that the operation is devoid of risk, but what I do say is that if strict antiseptic precautions are used the danger is not more than that of many ordinary operations. In so far as the operation itself is concerned, the surgeon may almost invariably give a favourite prognosis: it is the sequel which is most to be feared, but here again I think that the risks have been much magnified, and that if anti-

septic dressings be previously applied the result may, in the greater percentage of cases, be success.

I think that our want of success in some canine surgical cases may often be traced, not to our want of knowledge in antiseptic treatment, but to our carelessness in carrying out details, which are, perhaps, a little tedious to those of us who are not enthusiasts in our work, but which are none the less essential to success in our surgery of the lower animals than in that of the higher animal man. We are apt to get careless about such details as shaving off the hair, etc., things which our human *confrères* are very particular about, and which we, on account of the greater thickness and closeness of the hairy covering of our animals, ought to be still more particular of. Attention to these little things is the keynote of success in treating successfully any of the forms of hernia in the dog and cat. And it is not so much in the operation itself that the danger lies, as in the attention to the surroundings and to the patient afterwards.

By the term "hernia," or as it is more commonly known "rupture," in surgery is meant the protrusion of an organ from the cavity in which it is naturally contained through an abnormal or accidental opening in its walls. Hernia always consists of a sac—made up of the peritoneal lining, muscle, and skin, which has been stretched by the protrusion of the organ—and contents. The latter are subject to very great variations. Herniæ are met with in all sizes from that of a hazel nut to that of a good sized pineapple. In my own experience they have been much more common in the dog than the cat, and more common in females than in males.

The different forms met with are: umbilical, ventral, inguinal and scrotal. Of these umbilical and inguinal are most commonly seen, the latter being more common in the female than the male.

Taking each one in turn, umbilical hernia, a protrusion of some portion of the abdominal organs through the umbilical ring, is most common in young animals of either sex, is frequently congenital, and often disappears without any treatment. Observation leads me to think that if it has not disappeared by the time the animal is six months old, treatment is necessary in order to prevent it from becoming an unsightly and uncomfortable swelling. As a general rule the herniated organ is omentum, and the dangers likely to arise are: first, that the bowel may follow, and at some time or other become strangulated; secondly, that the skin may become bruised and ulcerated, causing adhesion; or, thirdly, that the animal may get a slight wound through the skin, and thus allow the escape of a portion of bowel.

The treatments advised are: painting the parts with tr. iodi or some strong astringent; cauterization by nitric acid is recommended by a French text-book, and according to *The Veterinary Record* for September 25th, 1897, success had been obtained by injection of solution of chloride of zinc; the hernia may be reduced constantly and kept back by pressure applied by a compress of cord or other material, held in place by sticking-plaster or bandage; or resort may be made to surgical methods. The ones which I have tried or seen tried, have been the painting of the part with iodide, the continual reduction by pressure, and direct surgical interference, and I must say that I think the latter to be by far the quickest and neatest.

The method of operating is as follows: Thoroughly cleanse and, if necessary, shave the parts. Anæsthetise the patient either by a local or general anæsthetic, and place on the operating table in the dorsal position. Incise the skin carefully, enlarge the opening by the aid of a director, and endeavour to return the herniated part, and if necessary excise it. As a rule, as I mentioned before, this consists of omentum, and is frequently adherent to the dilated umbilical ring. The adhesions must be separated, the edges of the ring carefully scraped and then drawn into apposition by interrupted

sutures, either of catgut or silkworm gut. The latter are perhaps the best on account of the fact that they will remain in the skin for a very long time without becoming absorbed. The ends of the stitches are cut off close and the skin sutured over them. The wound is then carefully dried and dressed with some antiseptic.

As an antiseptic, iodoform in collodion (1-12) seems to me to be the best, because unless great pressure is also required, it does away with the necessity for a bandage, the latter being always difficult to retain in that part, especially in the case of a male animal.

The patient is then kept as quiet as possible for a few days and dieted carefully, the skin stitches being removed when necessary; and, unless the organisms of infection have entered the wound, is quite fit to be discharged from the infirmary in a week or ten days.

Ventral hernia is usually the result of external violence, and may be caused maliciously as by a kick, or accident, as in the case of an animal getting bruised when jumping palings or passing through a hedge. It is likely to occur with equal frequency in male or female, and is met with in dogs of all ages. Perhaps it is more common in the breeds which are used for outdoor work as opposed to the toy and pet varieties, on account of the former being more exposed to accident. The hernia often extends over a large area of the abdomen, and may include two or three different organs; in fact, in one instance we had almost the entire abdominal contents including spleen, stomach, part of the intestines, and part of the distended bladder.

Treatment, surgically, is carried out in the same way as with umbilical hernia, the organs being carefully returned into the abdomen, the edges of the opening lightly scraped if necessary, and the walls drawn together with close interrupted sutures.

Inguinal hernia is most commonly met with in bitches and is often of very large size when compared with the size of the animal; in fact, so much so that movement is very greatly impeded. It may occur in animals of all ages, although it is more common in those that have had puppies. It is very frequently found on both sides, although more commonly met with on the left. The specimen I have here in the aged Manchester terrier bitch is a fairly typical one, being in the left inguinal region and as large as half a good-sized cocoanut. The herniated organs usually include, in the bitch, one or both horns of the uterus, and there may be present omentum and intestine. Sometimes the two horns are together in one sac, sometimes one on each side. Not infrequently the herniated portion of uterus is found to be pregnant.

Surgical treatment is the one which I think to be the best, and it consists in anæsthetising the patient, returning the organs into the abdomen and suturing the relaxed inguinal ring and skin. This is accomplished by cutting down directly upon the inguinal sac and endeavouring to return the contents into the abdomen. If possible this is always better to be done without opening the sack itself, the latter being ligatured as high up as possible and its lower portion excised. If necessary to open it the sac is incised, the organs returned, the relaxed inguinal ring itself drawn together with sutures, the wound in the skin being also stitched and kept as antiseptic as possible.

After treatment consists in keeping the patient quiet, dieting carefully, and taking care not to give heavy meals, and applying the usual dressing to the wounds. Careful observation must be kept for the formation of pus, as if it forms and is not released peritonitis is sure to be set up. A pad of antiseptic wadding placed firmly in the inguinal region against the sutures, and bandaged there, acts as a support, and is of great service in preventing rupture of the stitches.

Scrotal hernia is a condition which I have only met with once in the dog. As a rule the organ herniated is intestine. The reduction, especially in small dogs, is difficult unless the owner will consent to castration, because if the inguinal ring is sutured too tightly the cord is strangulated. My experience has been limited to one case, and in that I operated without castration, but the case was not a fair one to form any opinion upon, as the animal was a toy Manchester terrier, only six weeks old. and in a very collapsed condition. In fact, I had refused a few days before to operate, and it was only at the urgent and repeated wish of the owner that the attempt was ultimately made.

In all, during the past three years, chiefly in the College canine clinique, I have records of 26 cases, all of which have been treated surgically. Of these 5 have been umbilical, 18 inguinal, 2 ventral, and 1 scrotal. The detailed statistics of most of them have already appeared in the *Journal of Comparative Pathology* or *Veterinarian*, and the accompanying tables which I will pass round for inspection will show briefly the chief noteworthy characteristics.

Many of the animals I know to be still alive and well. Some of the cases were of more than ordinary interest.

It will be seen that on looking through the list that in several cases part or the whole of the omentum was excised without harmful result, and also that wherever difficulty was experienced in returning the uterus that was easily got over by ligaturing and excising it. The instance in which one pregnant horn was herniated and removed entire and yet the animal brought forth a normal pup (which lived and did well) about a fortnight later, shows what a lot of interference with the uterus may take place in some cases without producing abortion. In two cases the hernia sac included nearly every loose organ in the abdomen. It is worth noting, too, what a large proportion of the inguinal variety of hernia is found in females.

In conclusion, I think it will be admitted that the percentage of successful cases is very good, especially when there is taken into account the fact that the patients were taken as they came, and were not in any way picked. Very few of them were in any way prepared, and several were almost hopeless cases from the commencement.

There is one other point to which I ought to allude before sitting down, and that is as to the subject of mistaken diagnosis. One must be careful not to mistake enlarged lymphatic glands, or deposition of masses of fat, which often takes place in the inguinal region or under the mammary gland, for hernia. It is a mistake which may readily occur, and which I made myself on one occasion. Some mammary tumours, too, are not unlike ventral hernia, but are easily distinguished upon careful manipulation.

Discussion.

At the close of the reading of the paper, the PRESIDENT said he was sure they would all agree with him when he said he felt bound to give Professor Hobday a hearty welcome for his kindness in coming to Southampton to their meeting that day. He had shown them some very interesting operations, very successfully performed. He had shown them a great deal about operations that they had not known before, by the practice and explanation of scientific principles, which were a great improvement on the old-fashioned methods. He had noted several details in the operations, which he himself would put into practice when he had similar operations to perform. The dental case, he thought, was quite unique, and it seemed to him that the teeth were quite useful and painless. He frequently had owners of dogs come to him saying that their dogs had lost their teeth, and from what he had seen that day, he could tell them that false teeth would be of great service to their dogs. This was the first case of the kind that had

been brought to his notice, and he had no doubt that it would be followed by others. The case of umbilical hernia was a most successful operation. They had also to thank the Professor for a very excellent paper, which greatly assisted the value of the operations. It was the first time that Professor Hobday had been with them, and he was sure he would be expressing the feeling of all present in saying that he hoped it would not be the last.

Mr. C. PACK also desired to thank the Professor most sincerely for his kindness in coming down to their meeting. There were, as they knew, very great demands upon the Professor's time. He recently lectured on the same subject before the Lancashire Society, at Manchester, and as all these calls took him away for a time from his work in London, he thought they ought to feel especially obliged to him for coming down to them. When the Professor had asked him (Mr. Pack) to suggest some subject to bring before them he had replied that something practical would be best, and they had had something practical. He had shown them an excellent example of putting into practice the antiseptic treatment. He (Mr. Pack) could not remember seeing as many operations under chloroform, certainly not under antiseptic conditions, all the time he was at College, as had been shown to them that day. With regard to these operations, their success was largely due to the close attention to small details. They were very simple operations, but if they were put into practice under ordinary conditions they ran the risk of tetanus or septicæmia. As for hernia in the dog he had only met with one or two cases. He had had a case brought to him two years ago, and he had advised the owner to let it alone and the dog was still running about, apparently none the worse for it. Possibly if he had had the opportunities of knowledge they had gained that day he would have felt inclined to operate. It was certainly a great advantage to use iodoform and collodion, with which no bandages were required. He had always found it necessary in the case of bandages round the body, to have one bandage round the dog's breast, for if not, when the dog had been lying down and got up, he slipped out of the bandages. He thought the iodoform and collodion dressing was excellent, as it excluded air and avoided the use of bandages. With regard to scrotal hernia he thought that castration should be carried out at the same time.

The PRESIDENT: In my time at College the greatest number of dogs I saw in the infirmary was twelve.

Professor HOBDAY: We have twenty a day. or about 4,000 a year now in the infirmary. We operate on about four a week on an average. They are mostly the dogs of poor people.

Mr. H. HALL cordially endorsed the remarks of the last speaker. In thanking Professor Hobday for having come down at such short notice, and for giving them such an interesting paper, and such admirably carried-out operations as they had seen that afternoon, as far as hernia in dogs or cats, he had had up to the present very little experience. When he was at college, dog practice was practically non-existent. The only thing they saw was an old man who boasted that he had been bitten twelve or fourteen times a week by dogs suffering from rabies, and he prided himself as being unsusceptible to the virus of rabies. But as far as dogs were concerned, they were practically untutored. He had administered chloroform, but he had done it with a towel, and it answered the purpose, though it might be a case of hit or miss. He had had a case of a dog, perhaps two, that had died under chloroform, but that was only where chloroform was carried to extremes. He could only add his thanks to those of his fellow members for the kindness of Professor Hobday in giving them such well-conducted operations and interesting paper on them.

Mr. C. CARTER said he had had a good many years' experience of hernia, and not in dogs only, and he had always found that they had been treated with good results. It was a great treat to see animals lie so quietly under operation. In his father's time—60 years ago—there was no chloroform, and the animals were bound by large tapes. The first he saw of chloroform was in Professor Sewell's time. Until then chloroform was scarcely known, at any rate for that purpose, and he was sure that the old method was a very blundering one as compared with the exact and safe modern method. The advantage of the spray over the old bladder was obvious. He knew that, for it had been his duty to chloroform horses, and the advantage to the operator and to the animal was very marked. The simple cases of hernia which they had seen had been admirably operated upon, and he had no doubt that the same antiseptic methods would be equally efficacious in cases of scrotal hernia, whether castration was necessary or not.

Mr. J. W. BARFORD said he had been extremely interested in Professor Hobday's operations, although he dared say that if it had been pressed upon him in practice he would have himself attempted the same operation, although he had never seen it done before. He was very pleased that he had been able to be present, for if he were brought face to face with such an operation now he would know better how to attempt it. But the necessity for such operations were rare in the provinces, for people in provincial towns would not go to the expense. He must, however, thank Professor Hobday for coming down to show them such excellently carried out operations.

Prof. HOBDAY, in acknowledging the vote of thanks, said he could not agree with Mr. Barford that there were few cases for operation in small towns. He had known very small towns in which there had been very successful experiments carried out. But he knew that veterinary surgeons generally did not like dog practice, at any rate they did not attach much importance to it. A veterinary surgeon had said to him, "I would rather see the tail end of a dog going out of my yard than the head end of it coming in." And that, he thought, was a very general opinion. His experience after leaving college was, that if he could get hold of the dogs he could get hold of the horses afterwards. He had learned that in times gone by dogs were little thought of in the profession, but that was not so now. He was aware that in London it was too often the case that men who could very well afford to pay a guinea fee for their dogs would send them through some poor person, who would be let off with a smaller fee; but still the amount of fees paid for dog cases was considerable, a fact that was scarcely appreciated.

Mr. BARFORD said Mr. Hobday must have misunderstood him. What he meant to say was that there was a lot of work in dog cases, but there was little remuneration for it. That was his experience in a lucrative practice in Southampton, and Mr. Hall, who had succeeded him, would bear him out in that. He was very fond of the dog cases, and took great interest in them, but, as he had said, there was a lot of work and very little remuneration for it. People would not pay proper fees for the treatment of their dogs.

Professor HOBDAY said there was another point about it, and that was the operations could be carried out on a dog so much more safely than on other animals, provided that proper care and antiseptic conditions were used. In an operation on a horse the conditions were not so favourable; they had to trust so much to nature.

Mr. CARTER said he could bear out this from a large number of dog cases in his work.

The Leeds Conference.

Mr. C. PACK (hon. sec.) read a letter from Mr. William Hunting, Secretary of the National Veterinary Association, inviting the Southern Counties Asso-

ciation to send a delegate to the Conference at Leeds on the 29th ult., when the subject of the affiliation of the local societies to the National Society would be discussed. Mr. Pack added that the question was whether the Southern Counties Association would send a delegate. He would be glad if the meeting would instruct him as to an immediate reply.

Mr. CARTER thought it was rather short notice.

The SECRETARY said the matter had been discussed at the March meeting, and it appeared on the agenda of that day.

Mr. HALL thought it was the duty of the meeting to send a delegate. Was there anyone willing to go?

The PRESIDENT said he would be willing to go if the meeting decided to be represented.

Mr. CARTER: Then I propose that we send Mr. King.

Mr. BARFORD seconded, and the proposition was unanimously carried.

Mr. PACK proposed a hearty vote of thanks to Mr. H. Hall for so kindly allowing them the use of his surgery for the Professor's operations.

This was seconded by Mr. King and heartily accorded, Professor Hobday saying a few words of personal thanks to Mr. Hall.

At the close of the meeting the members of the Association dined together in the Royal Hotel, and a very pleasant time was spent, in recalling old college reminiscences and in discussing professional matters generally, until,

The PRESIDENT rising, at the close of the dinner, said they could not as a loyal body of Englishmen omit one toast although they had decided to have no toast list. He was sure they would receive with all heartiness their one toast of "Her Gracious Majesty the Queen." The toast was loyally received, and soon after the members separated to their various parts of the country, the President proceeding immediately to London, in order to be present at the conference in Leeds the next day.

THE SOCIAL AND SANITARY SOCIETY OF EDINBURGH.

Edinburgh's Milk Supply.

THE annual meeting of the Social and Sanitary Society of Edinburgh was held yesterday afternoon at the Café, 70, Princes Street, when the Rev. Dr. Cameron Lees, one of the vice-presidents, occupied the chair, and the attendance numbered about a hundred. Apologies for absence were intimated from Mr. R. Cox, M.P., Dr. Leslie Mackenzie, medical officer of health for Leith, and others.

The thirteenth annual report, submitted by the Rev. R. HENDERSON, for Miss Helen A. Methven, hon. secretary, showed that between November and March the ministers or missionaries of thirteen districts had been visited with the view of enlisting their sympathies in social and sanitary work. All of them expressed their sense of the necessity of such a society and their willingness to co-operate, though one or two, through want of lady visitors or of a missionary in their congregations, regretted their inability to take advantage of it. Nine parishes and mission districts had been visited and reported on during the year, and the superintendents had scheduled and forwarded the visitors' reports upon the evils complained of to the committee, by whom they had been transmitted to the municipal authorities for consideration and remedy. The complaints were of choked and defective drains and w.c.'s, which had been cleaned and repaired at ten places; of dirty cisterns, several of which had been cleaned out and covered; of dirty staircases and insanitary

areas, and such like matters. As to common lodging-houses, the committee again emphasised the evil of housing men and women in the same common lodging-house. As to literature, 2,725 leaflets had been distributed. The income for the year had been £63 6s. 1½d., and the expenditure £11 4s. 4d., leaving a balance on hand of £52 1s. 9½d. The Town Council had continued its grant of £10 in aid of the funds. The Rev. R. Henderson, in submitting the report, said there was one thing which was very needful, and which they hoped to accomplish during the present year, and that was the providing of a licensed lodging-house for respectable women. Referring to the milk question, he hoped that before long they would be able to establish a model dairy, which would guard the health of the citizens.

The CHAIRMAN, in moving the adoption of the report, said the Society started on very simple principles. It did not begin by promoting anything like a new organisation, but it took advantage of the services of those who were continually engaged in visiting the poor, and asked them to be careful to see in their visitations anything that might be needed in the way of sanitary improvement. Thus from the outset they had had always a large staff of visitors giving their services gratuitously. He thought those services had been of very considerable benefit. They rejoiced that the authorities of the city had always met them in the kindliest possible spirit, and welcomed any information that they could send to them regarding the sanitary state of the city. The Society had also put forth a good deal of effort in distributing literature, and they knew that it had been largely read. He hoped good results might come from letting the poorest people know what were the safe conditions of human life. He thought the report showed that they had made considerable progress, and had been at work very steadily during the year. Of course, it might be said that the matter of inspection was one that belonged more especially to the town authorities. Well, perhaps it did, and he was sure they would be very glad if the town could organise a band of visitors who would visit the houses of the poor as regularly as the members of the Society. But, until that was done, they must do the best that they could. He thought the citizens of Edinburgh, of all classes and degrees, should be very glad of the Society's visitors, for those living in Rothesay Terrace or other such quarters might suffer from disease occurring in the High Street. There were other lines of work which the Society might follow. As to the milk supply, they knew that cows were subject to a disease called tuberculosis, and in the public health report for Mid-Lothian it was stated that in an average dairy 20 per cent. of the cows were subject to that disease, which was communicable to human beings. The reporter for Mid-Lothian called attention to the great prevalence of tuberculosis, and showed that about every seventh person who died, died of that terrible scourge, and that every fifth or sixth person who died during that year below twenty-five years of age died of it. It was, therefore, for the members of the Society and for all who were interested in public health to see, and to consider most attentively, what could be done in that matter. The calamity at Maidstone was an object-lesson to the citizens of every city in the Empire to do what they could in the way of prevention.

Dr. STODART WALKER seconded the motion, and the report was adopted.

Dr. BROCK, Medical Officer of Health for Mid-Lothian, said he had been asked to move a resolution bearing upon the milk question as it affected Edinburgh. In doing so, he asked their attention for a few moments. Milk, he said, was one of their greatest food supplies, and it was most essential that they should get it as pure as possible, of as good quality as possible, and as cheap as was compatible with purity and excellence of quality. Its production and distribution fell far short of safety. The diseases liable to be carried and spread through the agency of milk were especially tuberculosis and the various infectious diseases. When he told them that tuberculosis was

a disease causing the death of one-seventh of the total deaths of this country, and that it was communicable to man through the milk and flesh of animals affected with the disease; and, further, that 20 to 50 per cent. of the dairy cows of this country were tuberculous to a greater or less degree, he thought they would agree with him that every effort should be made to eradicate this possible source of infection to man. In the human subject the disease showed itself in several ways—as in consumption of the lungs, consumption of the glands of the intestines, in disease of bones, and so forth. It was a disease that appeared very slowly, and the child that was fed upon tuberculous milk might only years afterwards exhibit symptoms of consumption. It might not only be communicated by milk, but by cream, butter, cheese, and by butter-milk. The way to prevent it from these sources was plain—namely, to insure that the animals were free of the disease. That they were free could be now proved by the use of tuberculin, a preparation which he need not discuss. The weeding out of tuberculous animals from a herd was a matter of great expense, and the dairyman who did it was naturally unable to sell his milk as cheaply as those who kept unsound cows. He knew of one dairy-man, however, who had aocomplished what he desired—namely, a healthy herd. When cows were confined in byres, as at present constructed, they rapidly became tuberculous, and, to ward off the disease, very free ventilation and plenty of light were necessary. But very free ventilation in this climate, without artificial heat, meant a poor yield of milk, and therefore the question of artificial heating at once suggested itself. When they had a healthy herd and a warm byre, the warmth of which was independent of the animal's own heat, and if they had constant supervision of the dairy by a veterinary surgeon, who removed at once an animal reacting to tuberculin, and who would watch over other diseases affecting the udders of cows, likely to cause stomach and intestinal disorders in the human subject, it was an easy matter to prevent the diseases communicable directly from the cow to the human subject through the agency of either milk, cream, butter, cheese, or butter-milk. But that did not insure against the diseases conveyed from man to man where milk was a common medium of carriage, and in that connection he should only mention one affection, as it was the most commonly spread one, viz., scarlet fever. That disease was perhaps the most difficult of all to prevent. They might have a healthy herd, a pure water supply, pure air of byres, and an otherwise perfectly sanitary state of things; but let scarlet fever appear in one in contact with the dairy, even in so mild a degree as not to cause the slightest appre-hension on the part of those conducting the dairy that anything was wrong, and before forty-eight hours the disease was unwittingly spread broadcast. The prevention of the spread of such a disease could only, in his opinion, be effected by daily snpervision of the dairy workers by a medical man, who removed from the premises anyone suffering from the slightest inflamed throat or in whose house anyone was so suffering, until he had satisfied him-self of the safety of allowing the person to return to work. Such person should be on full pay during absence. Dairy premises when built should be entirely removed from the immediate neighbourhood or any dwelling. Another most essential point to be attended to was this—and its importance was one of the greatest—that milk should pass direct from a dairy to the consumer, and not through middlemen. Some of them might say all these precautions he had been talking of would, were they taken, entail enormous expense and raise the price of milk. No doubt they would, but was it not, even for the working man, cheaper to pay a little more for his milk than to pay the medical attendant of the family for visits and the druggist for medicines to his children, either for intestinal or gastric troubles due to but too common impurities in milk, or for the prolonged illnesses due to such infectious diseases as scarlet fever, diphtheria, and typhoid? For his own part, he

thought the better classes could at that moment safeguard themselves readily enough from all the dangers likely to arise in the production and distribution of milk, by establishing a dairy on the lines he had indicated, but anything short of what he had indicated would not meet the essential requirements. It had been computed that such an improved dairy would pay any shareholders a reasonable dividend. But one thing would require to be specially guarded against, and that was making any dairy company a company for profits. If it were found that such a dairy, after starting, could afford to pay more than 3 per cent. with milk, say, at 1s. 4d. per gallon, further profits should go to the cheapening of the milk sold. They had no such dairy in this country. If one were started in the neighbourhood of Edinburgh, and proved a success, it would rapidly stimulate a wider trial. But what could they do meantime to render safer their present milk supply until such models were established? And he would be able to tell them how, as a society, they could do a world of good. If they divided Edinburgh into districts, and organised a band of workers who would do something more than call at the doors of the houses and deliver leaflets of the society, who would enter the houses of the working classes and of the poor, and in fact of all classes, and teach the people the importance of rendering the milk they used as innocuous as under the circumstances they could render it, what an amount of sickness they might prevent! Milk, when sterilised by heat, was bereft of the danger arising from infectious organisms. There was something in the method of sterilising requiring a little instruction, and his laboratory assistant—Dr. Cameron, of 13, Fettes Row—would be very pleased to demonstrate to them, or any persons they could get to take up the work, such points in carrying out sterilization as would diminish as far as possible interference with the natural flavour and composition of the milk. Visiting the people in that way and instructing them would soon cause the public to make a strenuous endeavour to improve and perfect the sources of their milk supply. He had much pleasure in moving the following resolution:—"That this society, recognising that the time has come when urgent steps should be taken to place the milk supply of Edinburgh on a thoroughly satisfactory basis, pledges itself to use all the means in its power to further the necessary reforms."

Dr. FOULIS, in seconding the above motion, said there never had been a more important subject before their society than the one they were considering at the present time, viz., the best means of obtaining a pure milk supply for the city of Edinburgh. Milk, he maintained, was the most common vehicle for the dissemination of infectious diseases. If they could only do that which they ought to do, in the presence of the knowledge they possessed as to the causes of these so-called infectious diseases, it was possible for them to prevent an enormous amount of suffering, disease, and death. That that was so might be gathered from a report drawn up by the editor of the *British Medical Journal*, in which it was made out that, within a few years, eighty-three epidemics of infectious disease in England were proved to be directly caused by specifically contaminated milk. It was found that in these 83 reported cases, no less than 2,946 individuals suffered from contaminated milk; and out of that number of cases, nearly 400 deaths took place. For the last 20 years there had been numerous epidemics of scarlet fever in various parts of Edinburgh. It was always prevalent, and it was difficult to say why; but what he wanted to bring out was that 80 per cent. of the scarlet fever cases that had come under his observation during the last twenty years had been directly and indirectly caused by milk contamination, and these cases could be prevented if they did what they ought to do, and were able to do. It was generally, if not always, found that when the milk supply was stopped

the epidemic also came to an end, but it was most important that they ought to be aware that nothing adequately was being done to prevent these epidemics. Dr. Foulis then went into details regarding several of the epidemics which had broken out recently in Edinburgh, all of which went to show the correctness of his assertion that the spread of disease was caused by milk supply, in many cases scarlet fever being discovered at the farm where the milk came from. In most of these epidemics adults were affected, and he pointed out that when adults were found to be suffering from scarlet fever, it was a pretty certain sign that they had a milk epidemic. In connection with one of these epidemics, he would like to mention the opinion of a leading dairyman. His statement was to the effect that doctors were all on the wrong scent. They were ruining the dairymen, and he (the dairyman) ventured to say that there was as much connection between milk and scarlet fever as there was between the man in the moon and the Fourth Commandment. That was the opinion of a dairyman about 1891, but he (Dr. Foulis) would venture to say that it was not the opinion of dairymen at the present time, nor of the public generally. He asked if there was any means by which the diseases traceable to milk could be prevented? In Edinburgh there prevailed at present what was called a Notification Act, but, in his opinion, it was an entire failure in two respects. In the first place, the difficulty of diagnosing between one infectious disease and another—between scarlet fever and diphtheria in its initial stage—was so great that medical men had sometimes to wait five or six days before they gave in their notification. Another point was that frequently notifications were sent in on Saturday, and not the slightest notice were taken of them till Monday. As to the prevention of the diseases, he said they must have perfectly healthy cows and perfectly healthy human beings. Nine-tenths of the sufferings produced by milk could be entirely prevented if they started such a dairy scheme as was now proposed to be started by some medical men.

Principal DEWAR, in supporting the motion, said that, from his own knowlege, a great deal had been done during the past ten, or even five years, to improve the dairies and the milk supply in and around Edinburgh. He did not, however, mean to say that they should stay where they were; but things could not be done at once. A great deal could be done in the way of educating the public as to the necessity of pure milk. He would like very much to see such a dairy as Dr. Foulis had spoken of, but if he could show that a dairyman who had been referred to could not supply him and those who were asking pure milk at a reasonable price, he had no doubt that someone else would be able to step into that dairyman's place and supply them. Before this proposed sanitary dairy was started they would have to educate the public to make a demand for pure milk. As far as the inspection of cows was concerned, the city of Edinburgh had done more than any other city he knew. He urged that the Government should take the matter in hand, and try to eradicate tuberculosis from the breeding herds of the country.

The resolution was then adopted.

On the motion of the Rev. Dr. TEAPE, seconded by Mr. LUNDY, a committee for the ensuing year was elected.

Mr. COOPER, Burgh Engineer, Edinburgh, in moving a vote of thanks to the committee of last year, spoke of the value of the members of the Society as visitors to the slums of the city.

Other votes of thanks were also awarded.—*The Scotsman, Nov. 17th.*

TRAGIC DEATH OF A VETERINARY SURGEON.

Limerick, Saturday, Oct. 23.

ANOTHER horrible occurrence startled the people of Limerick this morning. Mr. John O'Riordan, V.S., was killed last night while driving into Limerick. It appears that the deceased gentleman left Rathkeale, where he had been attending the Quarter Sessions, to drive home about 5.30. Mr. J. H. Moran, solicitor, accompanied Mr. O'Riordan, and when close to the village of Patrick's Well it seems they met a heavy cart driving in the opposite direction, with which Mr. O'Riordan's trap, a Liverpool gig, collided, and he was thrown precipitately upon the road, receiving such injuries that he died soon afterwards. Mr. Moran was also hurled out of the trap, and had a marvellous escape. The news was received with general sorrow in Limerick, where Mr. O'Riordan was highly esteemed by a wide circle of friends. He was admitted an M.R.C.V.S. in April after a distinguished career in Edinburgh. He was some time ago well known in racing circles as a gentleman rider, and he often carried the colours of Mr. B. O'Donnell and other local owners to victory. Mr. O'Riordan was one of the most popular of men in those days, and latterly he was well knewn in his professional capacity all over Munster. He was highly complimented at the Limerick Quarter Sessions by his Honour Judge Adams. The late Mr. O'Riordan was 42 years of age, and leaves a widow and children to mourn his untimely end.

An inquest was held on the remains, at the residence of Mr. Lynch, a farmer at Newboro' Cross, near Patrick's Well, where the accident occurred.

Mr. P. J. O'Sullivan, solicitor, Limerick, appeared for the next of kin, and District Inspector Gamble conducted the proceedings on behalf of the Crown.

Mr. J. H. Moran, solicitor, was the first witness examined. The deceased and witness left Rathkeale about twenty minutes after six. They drove at the rate of eight English miles an hour. The deceased was in the driver's seat at the right side. They stopped at Mr. Cregan's, Adare, where they had one drink. They delayed there about ten minutes. They travelled along together then until they came to Newboro', where the accident occurred. Deceased was in the best of health and spirits. When they came to about fifty yards from the cross they saw what witness thought at the time was a float, but which he had since learned was three common cars. The first thing witness heard was the deceased saying, "My God, something is into us," and in a second witness was pitched over with the trap. Witness lost his senses for ten or fifteen minutes afterwards. He was thrown to left side of the car and caught the leather trace. The wheel went over his left side and head, crushing his hat. Mr. Lynch, the owner of the house where the inquest was being held, then came up with a lantern, and they went back and found the deceased dead in a pool of blood.

In reply to Mr. O'Sullivan, he was quite positive that they were at the proper side of the road. The objects they met were going slowly.

Mr. Francis M'Mahon, Drehidarsna, deposed that he was driving a horse and common car last night. There were three cars there, and witness's car was the last. When they arrived at about a hundred yards beyond Lynch's Cross, on the Adare side, witness felt a slight crash against the side of his car. He had heard nothing before that. The car that struck against his went on, and he could not say that anything was wrong with it. It was going, according to his idea, at the rate of about ten or twelve miles an hour. His car and the others were walking at the time.

Coroner: The trap came on too quickly for this man to get out of the way.

Mr. Moran: That is the substance of it.

Mr. Cornelius Cregan, Dunraven's Arms Hotel, Adare, deposed to deceased and Mr. Moran calling at his establishment and having a drink. Both were perfectly sober.

According to the evidence of Dr. Clifford, death was instantaneous.

The jury found death was due to concussion of the brain. They blamed nobody.—*Freeman's Journal.*

BREACH OF WARRANTY CASE.

JONES *v.* SPENCER.

THIS was an appeal from an order of the Court of Appeal, refusing by a majority to set aside the verdict of the jury in the action.

Mr. Amphlett, Q.C., and Mr. E. A. Owen, appeared for the appellant; and Mr. Witt, Q.C., and Mr. Sidney Clarke for the respondent.

The action was brought by the respondent, a horse-dealer in London, against the appellant, a farmer at Bromsgrove, in Worcestershire, to recover the sum of £70 for breach of a warranty of a cart horse, which the respondent had purchased from the appellant on a warranty that the horse was at the time of the purchase "a good worker." The case of the respondent was that on the arrival of the horse by train in London, it was immediately found to be "a shiverer," and as such, unable to back, and, consequently, not a good worker. In support of his case, the respondent called several veterinary surgeons who had examined the animal shortly after its arrival in London, and who pronounced it to be a very bad shiverer, and suffering from a disease which must have been in existence at the time of its purchase by the respondent. On the other hand, the appellant called a number of witnesses who had used the animal continually, and who swore that up to the time of the sale, the animal was perfectly sound, and had shown no symptoms of shivering. The jury found for the respondent for the amount claimed. The appellant thereupon applied to the Court of Appeal for a new trial, on the ground that the verdict was against the weight of evidence. The Court of Appeal, consisting of the late Master of the Rolls, Lord Justice Lopes, and Lord Justice Chitty, by a majority, Lord Justice Lopes dissenting, dismissed the appellant's application and upheld the verdict of the jury. In the course o his judgment Lord Esher remarked that, short of perverseness on the part of a jury, it was nearly if not quite impossible that a new trial could be obtained on the ground that a verdict was against the weight of evidence when there was conflicting evidence in the case. Lord Justice Lopes, on the other hand, suggested that the Court of Appeal had gone rather too far in refusing new trials in such cases, and that it was clear from the judgment delivered in the House of Lords in the case of the "Metropolitan Railway Company *v.* Wright," that a new trial ought to be granted if it were necessary to prevent a miscarriage of justice. The appellant now sought to have the decision of the Court of Appeal reversed.

At the conclusion of the arguments,

The Lord Chancellor, in giving judgment reversing the decision of the Court of Appeal, and directing a new trial, said that he did not propose to enter into the evidence, because, according to the long-established rule when the verdict of a jury was set aside, no observations as to the effect of the evidence should be made lest they might prejudice the new trial. It was sufficient to say that he did not think that the jury in this case had thoroughly appreciated the question before them. The learned Judges in the Court of Appeal did not appear to have directed their minds to the question because

the late Master of the Rolls appeared to think that a judgment which he (the Lord Chancellor) had delivered in the case of the "Metropolitan Railway *v.* Wright," made it necessary to refuse a new trial in a case of this sort. He was not aware that he had laid down any new rule in that case, and he had found in a case more than a century old very much the same language as he had himself made use of in the "Metropolitan Railway Company *v.* Wright." The appeal must be allowed with costs.

The other noble and learned lords having concurred,

The appeal was allowed and a new trial ordered, the respondent to pay the costs in that House and in the Court of Appeal; and the costs of the former trial and of the new trial to be dependent upon the result of the latter.

PROSECUTION *RE* SHIPMENT OF ANIMALS.

JOHN MCDONALD, master of the s.s. *Oxana*, lying in the Surrey Commercial Docks, appeared at Greenwich Police-court on October 19th, before Mr. Kennedy, to four summonses for breaches of the Diseases of Animals Act for allowing pens to be used for the conveyance of animals on the *Oxana* which did not comply with the limits prescribed by the Board of Agriculture, on May 23rd and May 26th, and for failing to cause the ship to be suitably and sufficiently ventilated on the same dates. The offences were laid at La Plata and at Birkenhead respectively. Mr: Colbeck prosecuted for the Treasury, and Mr. Kilburn was counsel for the defence.

Mr. Colbeck having stated the case,

Mr. Kilburn said he was not in a position to contest the measurements of the pens, but the captain was obliged to conform to the regulations of the Argentine Government, otherwise he would not be cleared. The Argentine Government insisted upon pens of a perfectly different size, and the defendant was therefore between Scylla and Charybdis. He could not clear his ship from the Argentine unless he complied with the Argentine regulations, and if he did so he had the honour of appearing before his worship. The captain conformed to the orders in the Argentine, which required that four bullocks should be placed in each pen, and that each should have 8 feet by 32 inches space.

Mr. Colbeck said that the defendant would still be bound by English law, it being an English ship.

Mr. Kilburn argued that the information was bad, and that the magistrate had no jurisdiction in La Plata.

Mr. Kennedy suggested an adjournment, as the defence had taken them all by surprise. It seemed that the defendant had complied with the law of the Argentine.

Mr. Colbeck said that if the defence was to be upheld, the regulations of the Board of Agriculture could always be ignored.

The summonses in respect of ventilation were then gone into, and in the result Mr. Kennedy said those summonses would be dismissed, as he thought everything had been done that could be done. As to the pens, he must dismiss from his mind the question of the Argentine regulations, as the defendant was bound by the law of England. He would be fined £5 and £2 2s. costs on each of the two summonses.

Mr. Colbeck said the defendant did not conform even to that regulation.

Mr. Kilburn said that sheep were allowed about six square feet, but there was no difficulty about the sheep.

Mr. Colbeck contended that defendant was bound by the orders of the Board of Agriculture.

The defendant gave evidence, and said the Argentine Government surveyors inspected his vessel, and upon their report he obtained clearance. If the dimensions of the pens did not comply with the regulations, they would not have been cleared.

Mr. Kennedy: You seem to be rather between the devil and the deep sea, but you are bound by English law. The summons alleges an offence at La Plata, in the Argentine Republic.

WARRANTY CASE AT HOLMER.

At the Hereford County Court, before his Honour Judge Harris Lea and a jury, a remitted action was heard in which Mr. Charles Holborough, of the Commercial Inn, Commercial Road, Hereford, sued Mr. T. St. George Fountaine, of Holmer, to recover the sum of £48 10s., being £47 5s. the amount paid on the purchase of a horse and £1 5s. expenses incurred through an alleged breach of contract. Mr. Garrold appeared for plaintiff, and Mr. J. Corner, instructed by Mr. W. Boycott, for defendant.

Mr. Garrold stated that in the month of August last a man named Evans had agreed to buy some pigs from Mr. Fountaine, and as he had not the money to pay for them, he asked Mr. Holborough to go with him and pay for them. He did so, and the pigs were driven away. Whilst at Holmer, Mr. Fountaine asked Mr. Holborough if he did anything in horses, and Mr. Holborough said he occasionally bought one or two. Mr. Fountaine then said he had a very good cart horse for sale, and ultimately plaintiff inspected it. Upon going to back it in the shafts, he could not do so as there was no belly-band on. Mr. Fountaine asked £60 for it, but ultimately accepted 45 guineas. Plaintiff asked him for a written warranty, but he said he never gave one, and asked him to take his word as a gentleman that it was a good horse. The horse was delivered the same evening, and plaintiff requested defendant's man to have the horse shod. It was taken, and the blacksmith said it was a "shiverer." That was a peculiar disease—an infection of the hind legs that prevented a horse from backing. It was not only an unsoundness, but an ailment which prevented a horse being a good worker. Mr. Holborough thereupon sent the horse back, and went next day to stop the cheque, but found it cashed. They, therefore, alleged that the contract was void—first, because the horse was unsound; and, secondly, because it was not a good worker.

Plaintiff was called and bore out Mr. Garrold's opening statement.

Cross-examined by Mr. Corner, plaintiff said that defendant stated the horse to be sound, and a good worker, but when he got it home it was found to be unsound. That was the breach of warranty he complained of. He did not allege anything else.

Edward Evans was called. He stated that he saw the attempt at backing, and heard defendant say that plaintiff could take his word for it that the horse was sound and a good worker. Having had his attention called to the horse by the blacksmith, he noticed that it had the "dimmy shivers"—"it shook its leg like this you know," added witness suiting the action to the word amid laughter.

Cross-examined by Mr. Corner, witness said that when they saw the animal at Holmer it was "warm for the job."

Mr. Corner: What do you mean by that? Do you suggest they had been preparing it?

Witness: I suggest nothing.

Mr. Corner: Well, but Mr. Fountaine didn't know you were coming, did he?

Witness: No, he didn't, but Mr. Captain Fountaine was right for the job; he was down at the bank to cash the cheque before Mr. Holborough, and Mr. Holborough said it was a "gonner."

Thomas Smith, blacksmith, said he was of opinion the horse had the shivers.

Mr. S. Beeson, veterinary surgeon, deposed to having examined the horse. It was subject to shivering. Shivering was an acute unsoundness.

Mr. Corner asked Mr. Garrold if he imputed fraud?

Mr. Garrold said he would not be cross-examined.

Mr. Corner submitted that he had no case to answer. Fraud was not alleged, or if alleged not attempted to be proved. The claim was one for damages for alleged breach of warranty. Where a specific article was sold and there was no term in the contract that the purchaser might return the article, the purchaser could not return that article, and he was bound by the warranty given, and his only remedy was to sell the article and claim for the difference. He contended that the horse should have been sold by plaintiff, who should then have brought an action to recover the difference. He quoted cases.

His Honour over-ruled the point.

Mr. Corner then opened the case for the defence, contending that everything had been done straightforwardly.

Defendant stated that he had worked the horse for two years in all gears, and had always found it satisfactory. Plaintiff had every opportunity of examining the horse. Plaintiff asked him to have it vetted, which he delined to do, and said he would take it as he stood. He never asked for a written warranty, nor did he say he could take his word as a gentleman that it was sound and a good worker.

Cross-examined, Mr. Dutton might have told him the horse had the shivers. Mr. Prosser had the horse and returned it. He (defendant) bought the horse at Hanley Court as a "crabbed" one.

William Mould, wagoner to Sir Joseph Pulley, said he was formerly wagoner for Mr. Wall, Hanley Court. Whilst there he broke this horse in. It was an excellent worker. He never had any difficulty in backing him.

Cross-examined, it was two years since he worked the horse.

Harry Meek, bricklayer, said he worked the horse for sixteen weeks last year, hauling. It was a good worker. He had no difficulty in backing.

Henry Matthews, wagoner for Colonet Scott, Westhide, said he was also wagoner to Mr. Fountaine from March, 1896, to May, 1897. He corroborated as to the good working qualities of the horse.

Cross-examined, he had seen the horse put out its hind leg and twitch it. He did not know what a shiverer was.

His Honour pointed out that this was not denied. Defendant himself had practically stated that he bought it, knowing it had the shivers.

William Bowen, wagoner to Mr. J. Thorne, Holmer, said he had used the horse for mowing, and found it satisfactory.

Mr. Corner said he had four more witnesses.

The jury, however, did not wish to hear them.

Mr. Barling, veterinary surgeon, said he examined the horse at the request of Mr. Garrold, on behalf of plaintiff, but was not called by him as a witness. The horse was a shiverer. It might, however, do good work, although sometimes with a little inconvenience to itself. In cases of horse dispute, the animal was always sold and the difference sued for.

Cross-examined, the horse was unsound. The disease of shivering was one that as a rule got worse.

Mr. Carless, veterinary surgeon, said he agreed with Mr. Barling.

Mr. Corner then addressed the jury on the evidence, maintaining that there had been no misrepresentation, and Mr. Garrold replied.

The jury found for plaintiff, and a verdict was entered accordingly.—*Hereford Journal.*

RINDERPEST INVESTIGATIONS.

Report on the Progress of Research Work; at the Rinderpest Experimental Station, Kimberley; with Special Reference to a Method of Immunisation by means of Inoculation with Virulent Rinderpest Blood simultaneously with Fortified Serum of Salted Animals.

Rinderpest Experimental Station,
Victoria Compound,
Kimberley,
September 11th, 1897.

To the Honourable
The Secretary for Agriculture.

SIR,—We have the honour to make a further communication concerning the progress of our work at this station. In a report dated 16th July, 1897,* we discussed the use of glycerinated gall, and also gave our reasons for hoping that the use of either defibrinated blood or serum would be of great practical service in arresting the disease in herds already affected. In this report we shall again offer some remarks with regard to the use of bile, and are pleased to say that we can show that our expectations with regard to the curative value of defibrinated blood and serum have been amply fulfilled.

Lastly we beg to lay before you for your consideration a method of salting cattle by means of virulent blood and serum which in many respects is entirely new and differs considerably from any yet practised. We are of opinion that the method will confer upon the cattle an immunity as nearly equal to that obtained after recovering from the natural disease as is compatible with the safety of a large percentage of the animals treated.

Moreover, the method is less costly, requiring a smaller sacrifice of animal life, and can be more readily worked by the farmer than those hitherto in vogue.

BY INOCULATION.

When first Professor Koch demonstrated the novel possibility of immunising cattle from rinderpest by using the gall of an animal which had been suffering from the fever for six days, it was surmised that the gall itself or the animals subject to its influence might impart the disease to others.

This very natural fear caused those who had the direction of the preventive measures to confine the gall inoculation to herds already infected or which were in the immediate neighbourhood of infection.

Koch himself was decidedly of opinion that the gall would not give the animal operated upon rinderpest, and based his opinion on the fact that during the time he was experimenting at the Victoria Compound not one animal of those injected with various samples of gall became infected.

Subsequently, it is true, animals did suffer from rinderpest at the station after inoculation of gall, but at that time the station had become the most

* In this report Drs. Turner and Kolle give in detail the experiments conducted by them to test the value of Glycerinated Bile, and the very unsatisfactory results attained with it. They also show the advance which they had at that time made in the process of fortifying salted cattle with separate and increasing doses of virulent blood, in order to increase the immunising power of the serum obtained from them, thereby reducing the dose necessary to be given.

highly infected area in the whole of South Africa, and the wonder is, not that some animals did contract the disease, but that this accident did not occur with the majority of those brought on to the ground. Even the animals given us for experiment were not free from suspicion, and on four occasions these were found to be suffering from rinderpest and consequently useless for experimental purposes.

Shortly after the use of rinderpest gall had been in practical operation facts were observed which were construed as demonstrating that bile was capable of producing the disease in a fatal form. Reports were received showing that in herds which were declared free from infection at the time of inoculation, the disease appeared subsequently, generally on or about the tenth day, and this belief led to the practice being confined still more closely to areas in which it was feared the pest would soon make its appearance, and in our opinion acted most detrimentally by preventing the formation of a wide area or belt, occupied only by animals protected from rinderpest by inoculation, between the infected areas and those still free from pest, a project which Koch advocated and hoped to see realised.

In fact, instead of commencing at a distance from the disease and inoculating in a direction towards the disease, the reverse process was followed.

Koch operated on 135 animals on March 12th at Talpan. Only one animal died, a beast which was infected at the time of inoculation; none of the others showed any signs of the disease.

Drs. Turner and Kohlstock operated on 83 animals at Klippiesdam on April 6th, and though three samples of bile were used none of the animals showed any symptoms indicative of rinderpest.

If the reports of the veterinary surgeons and others are examined the cases in which similar results were obtained are very numerous. The fact, however, that disease did undoubtedly follow the injection even when precautions had been taken to preclude the possibility of previous infection, was allowed to weigh against these observations, and a *post hoc propter hoc* line of argument was followed, although these very experiments, even those which were successful, were necessarily carried out, until quite lately, in highly infected areas; a condition which interfered with their value as crucial experiments whenever the disease followed inoculation.

Dr. Turner had, as far back as April last, requested permission to try the experiment on a large scale under conditions which would, as far as was humanly possible, preclude any risk of the experiment being vitiated by the previous infection of any of the animals. For reasons we have no desire to criticise, this permission was withheld until July 13th, when Dr. Smartt and others at Britstown placed herds of animals, numbering in all 160, at the disposal of the Government for experiment. These animals were, on account of the great prevailing drought, in a very impoverished condition. They all received 10 c.o. of rinderpest-bile, but not one showed any symptoms of the disease in consequence.

Dr. Koch showed by experiment that virulent blood, mixed with the gall of a rinderpest animal in large proportions and injected into a healthy animal, failed to produce rinderpest. This experiment has been repeated, and it has been found that until the blood and gall are mixed in equal proportions and injected, very shortly after mixing, into a healthy animal, there is practically no chance of infection following.

This experiment is of importance because even if a particular sample of gall were capable of infecting, as the bile used amongst large herds is necessarily a mixture obtained from several animals, the mixture of samples incapable of imparting the disease would probably deprive the one dangerous sample of its power of infecting.

That the animal undergoing immunisation by means of gall is no source of

danger has been proved over and over again by leaving animals unprotected by bile inoculation to graze with numbers of others undergoing that process, and also by injecting into a healthy animal blood drawn from beasts in course of immunisation at various stages.

Feeding with rinderpest gall and smearing the nostrils with the fluid are equally devoid of danger. Indeed, the introduction of large quantities of the bile into the alimentary canal appears to excite a certain protective action.

Perhaps, however, the best evidence which can be brought forward to show that rinderpest gall is harmless is to be gathered from the reports of those inoculators who assert that it has actually caused the disease and who attempt to bring forward facts in evidence of that assertion.

Take, for example, the following return made by the veterinary surgeon on May 31st, the names of the owners only being omitted :—

Name of Farm.	Number of Cattle on Farm.	Number inoculated.	Number affected at time of inoculation.	Number that became infected after inoculation.	Number that died after inoculation.	Remarks. Date of Inoculation.
Charlottesdaal	133	133	0	133	100	May 9th. (1 Cow died May 8th.)
Zoutspanfontein	8	5	3	1	1	May 10th.
Deelfontein	55	55	0	0	0	,, 11th.
	38	38	0	0	0	,, ,,
	14	14	0	0	0	,, ,,
	8	8	0	0	0	,, ,,
	24	24	0	0	0	,, ,,
	20	20	0	0	0	,, ,,
	100	100	0	0	0	,, ,,
Warrenton Commonage ...	70	70	0	0	0	,, 12th.
Deelfontein	38	38	0	0	0	,, 13th.
	19	19	0	0	0	,, ,,
	15	15	0	0	0	,, 14th.
Warrenton Commonage ...	63	63	0	0	0	,, ,,
	96	96	0	0	0	,, ,,
	11	11	0	0	0	,, ,,
	16	16	0	0	0	,, ,,
Deelfontein	150	150	0	10	7	,, 15th.
	45	45	0	3	0	,, ,,
	92	92	0	5	1	,, ,,
	44	44	0	1	1	,, ,,
——	1059	1056	3	153	110	

This return shows that out of 1,056 cattle injected with bile on 21 farms in this neighbourhood 153 are reported to have subsequently suffered from the disease and 110 died, consequently 88·7 per cent. of the animals escaped.

The two first farms are admittedly infected; if we omit them we have 918 animals operated upon, of which 19 became sick and nine died. That is to say that 98 per cent. of the animals were immunised.

It will be observed, moreover, that while on the 9th and 10th May, operating on undoubtedly infected herds, the loss was 73 per cent.; during

the 11th, 12th, 13th, and 14th no less than 587 beasts were injected by the same operator without one case of rinderpest occurring, and it was not until the 15th that the disease is supposed to have followed the inoculation. It was stated that there were no animals visibly affected on the day of inoculation, but this by no means implies, as it is always assumed to do, that the herds were free from infection. An animal may be infected and not show any signs of the disease for a week or ten days or even more. For instance, had the first herd in the list, that at Charlottesdaal, been inoculated on the 1st of May instead of on the 9th, it is absolutely certain that the fact that the cow which died on the 8th was already infected would have escaped observation. The herd would have been returned as consisting of 134 animals, none of which were affected, and the result, which would undoubtedly have been very bad, would have with equal certainty been attributed to the bile.

One of the most instructive examples is contained in a letter published in the *Diamond Fields Advertiser* of May 18th, 1897, from which we have made the following extracts :—

Animals not inoculated with Bile.

Locality.	Date.	No. of Cattle.	No. dead.	Death rate per cent.
Smithfield Commonage	Feb. 28—March 12	99	98	99·0
Spitzkop	April 28	385	300	77·8
———	———	484	398	82·2

Animals inoculated with Bile.

Locality.	Date.	Number inoculated.	Numbe Sick.	Subsequently dead.	Percentage.
Smithfield Commonage...	Feb. 27—March 2 ...	304	?	28	9·2
,, ,,	,, ,, * ...	147	?	114	77·5
Vermaak	Mar. 29—April 2 ...	73	?	18	24·6
Caledondraai	April 7—15	138	?	19	13·8
Korhaansfontein... ...	April 4	20	0	0	0·0
	,, 6 ...	35	2	1	2·8
	,, 2 ...	40	0	0	0·0
	,, 8 ...	60	0	0	0·0
	,, 10 ...	60	6	4	6·6
	,, 10 ...	65	0	0	0·0
———	———	942	?	184	19·5

This shows that animals left without the application of Koch's process died at the rate of 82 per cent., while those thus treated died at the rate of 20 per cent., a saving of 62 per cent.

The greater part of this mortality occurred in the herd containing 147 animals marked *. This herd was known to be infected and 77·5 per cent.

died. If this number be deducted from the total we have 795 animals inoculated and 70 deaths—a loss of 9 per cent, This loss has by the generality of persons been regarded as due to infection by the bile. Yet we find it noted in the letter that the two herds marked ‡ were injected with the same sample of bile, and that in the smaller herd of 35 there was a loss of 3 per cent., while in the larger containing 40 head there were none.

Again, those herds marked § were all inoculated with the same sample of bile. In two containing 125 the loss was nil, and in another consisting of 60 we find that 4 beasts died, and the loss was in the proportion of 7 per cent. This shows that the use of the same sample of gall in different herds of much the same size was followed by very different results.

In these experiments we have three factors, the operator, the gall and the herd. The two first were identical in each case. The herd was subject to variation, yet the difference in the results is by some process of reasoning attributed to one of the two factors which did not vary, and the variable factor is disregarded. We can only say that this mental process is incomprehensible to us.

The large number of cases in which the injection of gall, even in infected areas, was not followed by the disease, and the result of the experiment at Britstown are in our opinion evidence *that the gall itself cannot communicate rinderpest.* This is a fact to be much regretted, because were this possible then the immunity conferred by the bile would be of a much greater duration than it has proved to be. The fact that the disease so often appears on or about the tenth day after bile inoculation is capable of a very simple explanation.

The animals are generally driven into a kraal before the operation. Should only one of these animals in the herd be in the first stages of the disease, although it may roam over the veld without doing much harm, it immediately infects several others when shut up with them. The men who visit the animals frequently seize them by the nose to hold down the head, and in this way help to spread the infection very surely.

This risk happens whenever the herd is situated in an area subject to infection, and will occur in all cases even when the operator has taken care that he and his assistants have not been infected while taking the bile from the diseased animal and have properly cleansed the bottles and instruments, and *as the bile does not protect until the fifth or sixth day after injection there is plenty of time for infection to take place.*

Notwithstanding these drawbacks, Koch's method has produced results of the greatest service to the Colony. Sir Godfrey Lagden informs us that in Basutoland, an infected area, out of 100,000 animals injected, 70,000 have been saved and are still free from the disease, and undoubtedly but for this method we should not have been afforded the time necessary to work out a better one.

Glycerinated Bile.

In consequence of the widely-spread opinion that Koch's method was dangerous, means have been sought to do away with this supposed danger, and recently Dr. Edington has advocated the addition of glycerine to the gall in the proportion of one part of that liquid to two parts of bile. Dr. Edington claims for this mixture three great advantages :—

(*a*) That the disease cannot be spread by the use of glycerinated gall.

(*b*) That a great economy is affected by the use of glycerine ; all galls being available.

(*c*) That the mixture will keep.

The use of glycerine for the end proposed is nothing new ; it has long been employed for the purpose of purifying and preserving vaccine lymph. Dr. Koch

himself considered the advisability of using glycerine in the way mentioned, but found that it was useless and consequently abandoned it.

We quite agree that the glycerinated gall is incapable of spreading the disease, the bile itself being free from this objection. This argument, therefore, is, to say the least, extremely unsatisfactory.

If the gall spreads the disease it can only do so by the operation of the rinderpest organism, which in a modified form occurs in the gall.

But Dr. Koch showed that glycerine kills this organism, and we have shown that it practically deprives the gall of all *active* immunising power.

Dr. Edington, on the contrary, asserts that glycerine has no such power. How, then, can the addition of glycerine to gall remove the danger of spreading the disease? Either Dr. Edington's assertion that glycerine does not injuriously affect the organism is incorrect, or his implied assertion that the gall is capable of spreading the disease is unfounded.

The second claim (*b*) is that the use of glycerine effects an economy. The mixture of gall and glycerine certainly has a slight immunising power, due to the presence in the gall of a small amount of a peculiar chemical immunising substance. Dr. Edington's first experiments were made with 10 c.c. of gall and 5 c.c. of glycerine—in other words, he employed the same dose of gall as Koch recommended, and it was under these conditions that we made experiments to control his results. In some cases the bile and glycerine were mixed in the proportion recommended, and were kept for 8 or 10 days. In some the mixture was only allowed to act for five hours, in others only 5 per cent. of glycerine was employed and the mixture was kept 10 days. The results in all cases were similar, When injected with 0·2 c.c. of really active rinderpest blood after 10 days the animals without exception suffered severely, *and 70 per cent. died in consequence.* After witnessing these experiments Dr. Edington increased the dose of bile and glycerine to 24 c.c This dose will generally confer an immunity of more than 10 days' duration, and therefore explains the apparently favourable result obtained at Belmont. This increase, however, does away with the plea of economy. Twenty-four c.c. of the mixture contain 16 c.c. of bile, which is an increase of 60 per cent. over the quantity required by the Koch method. It is true Dr. Edington claims that he can use all kinds of gall, but the addition of glycerine to a gall which does not happen to possess immunising powers will not render it of any use.

The difficulty, too, of obtaining good bile has been much exaggerated. If the animals destined to produce immunising gall are infected with a small dose of really virulent blood, say 1 c.c.. and are killed at the end of the sixth day of the fever, at least four out of five will give typically good gall, and the gall of the fifth will in all probability be fit for use.

As a matter of fact, all galls which do not smell and which are not absolutely red from the presence of a large quantity of blood can be used without danger by Koch's process.

Certainly if gall is prepared in this way there is no occasion to reject four samples out of ten, which would be necessary to put the dose used by Dr. Edington on a par with the 10 c.c. prescribed by Koch.

The third advantage claimed, viz., that the gall and glycerine mixture will keep is undoubtedly true, *i.e.*, the mixture will retain its extremely feeble immunising powers for a considerable time.

Serum Inoculation.

During our investigations, in continuation of Dr. Koch's experiments, we have devoted special attention to the possibility of procuring an efficient serum. As the pure gall does not confer full immunity until after the sixth day, the point to be aimed at was to discover some method of producing

immunity which would be more rapid in its effect, and which might perhaps act at once after inoculation and could be employed as a cure, by which means we should be in a position to save herds already infected.

When Professor Koch first attempted to discover a preventive or a cure for rinderpest, he first turned his attention to the serum of salted animals. This would inevitably occur to any bacteriologist, and naturally Koch, in whose laboratory Dr. Behring, his assistant, worked out the use of serum in diphtheria and tetanus, was not at all likely to have overlooked this most obvious step. As a matter of fact, he used the serum of salted animals in two ways, first alone and secondly after the addition of 1 per cent. of virulent blood, and succeeded by both methods. Previously Pitchford and Theiler had demonstrated the possibility of salting animals with defibrinated blood of salted cattle, and afterwards Drs. Danysz and Bordet brought the system into practical use and determined many important facts with great accuracy. These latter gentlemen have successfully salted very large nnmbers of animals in the Transvaal.

But the dose of blood necessary was so large—100 to 200 c.c.—and its strength so uncertain that, although he never ceased making experiments with the blood and serum, Dr. Koch turned his attention principally to the practical application of the bile method. When we say that the dose of serum necessary is large, we do not wish it to be understood that it is large relatively to the animals operated upon. This is by no means the case, 100 or even 200 c.c., *i.e.*, 105 to 210 grammes, represent only a small fraction of the body weight of an ox, but it is large when compared with the quantity of blood available from one salted animal,—thus one litre would only suffice for 5 to 10 animals, and this, in our opinion, rendered it little practicable.

To bring this dose within suitable limits so that it might be used as a remedy, to devise a cure rather than a preventive of rinderpest, has been the object of our work for some time past.

Before the Parliamentary Committee on Rinderpest, held in Cape Town, one of us on the 10th May lnst related that he had unsuccessfully injected sick animals with 50 and 80 c.c. of serum twice daily, and expressed his intention to carry on the experiments with the hope of providing a means of saving valuable animals. This object we are pleased to say has been fully attained. Serum can now he prepared of such a strength that comparatively small doses (20 c.c. and less) are efficacious in the early stages of rinderpest and larger doses (50 to 100 c.c.) often succeeded in saving animals in the latter stages of the disease, collapses of cousre excepted.

Our experiments have been carried on both with defibrinated blood and with serum. The action of these two fluids is precisely similar. Defibrinated blood is easily prepared by whipping the blood with an iron wire brush to prevent ordinary coagulation and to remove the fibrin. It consists of serum *plus* the red blood corpuscles; but it is impossible, taking all the precautions practically available. to prepare this fluid on a large scale in such a condition that it will keep for more than a few days.

The serum, which is the defibrinated blood *minus* the red corpuscles, and which is made by allowing the blood to coagulate and the clot to contract, can with ordinary care be prepared so that, with the addition of a small percentage (0·5 per cent.) of Phenol, it may be bottled and kept for a long time. At present we have not sufficient serum bottles to make this fluid in large quantities, in fact not more than enough for 150 animals daily. The supply hitherto obtained has been used to send to places which were two or more days distant from the station, but as soon as the bottles, which are expected daily, arrive only serum will be manufactured here.

The animals which provide the serum are prepared in the following manner:—

A salted animal is obtained, either one naturally salted or one which has been given the rinderpest after having been slightly immunised. There are various ways of obtaining salted cattle which we will not now discuss. As soon as the animal has recovered from the disease, it is injected with 100 c.c. of virulent blood. This generally produces a febrile reaction. As soon as the reaction is over, 200 c.c. are injected, and the dose is thereafter increased to 500, 1,000, 2,000, 3,000, and 4,000 c.c. at once, always waiting for the reaction from the last inoculation to subside before administering the blood.

From such a salted animal 30 c.c. of defibrinated blood or its equivalent, 20 c.c. of serum, is an effective dose. For example: at the experimental station we have treated 24 animals suffering from rinderpest in the earlier stages, *i.e.*, with symptoms well marked, and all have recovered. Such a result is naturally not to be expected in the hands of farmers. who cannot take the temperature of the animal regularly, as we do, and therefore do not know when to repeat the dose. This repetition, however, is not often necessary. To show the strength of the serum, two animals already suffering from rinderpest were injected with 100 and 500 c.c. of virulent blood respectively. 1/1,000 of a c.c. of this blood would have killed a full-sized ox. Next day they each received 200 c.c. of serum; both have recovered.

The first opportunity we met with to test the defibrinated blood on a large scale occurred at Niekerkshoop, O.F.S. The animals there had been dying at the rate of 85 per cent. in February, until in the last week of February and the first week of March they were injected with bile. From that time the loss amongst herds of 482 beasts was under 9 per cent. up to July, when, being again exposed to infection, the animals began to suffer. At first the attacks occurred singly and were attributed to Galziekte, but they soon increased in number, became more characteristic, and seven died. The day we visited the herd, 16 animals had been isolated on account of sickness. The disease presented the usual symptoms of mild rinderpest, and we proved that it was rinderpest beyond dispute by bleeding an animal, then killing it and making a *post-mortem* examination. Half a cubic centimetre of its blood next day was inoculated into a healthy animal, which had the disease but recovered. On the following day the whole infected herd, consisting of 92 animals, received, subcutaneously, 30 c.c. of defibrinated blood taken from an immune animal. The next day another animal was sick, but this beast and the 16 others which were ill previous to inoculation recovered, and the rest of the herd are well at the present time.

The next experiment on a large scale was on the farm Brakpan, belonging to the De Beers Company. The animals on this farm were suffering severely. On August 19th 48 head were already dead. Of the remaining 76 only 16 were, as far as observation and the use of the thermometer could decide the question, yet free from disease. On the days mentioned these animals received 40 c.c. of the defibrinated blood, equivalent to 27 c.c. of serum. On August 22nd some which required it were reinoculated, and the disease was stopped with a loss of seven animals all of which were ill and not expected to recover when first inoculated, the proportion of loss being under 8 per cent. The great majority of these animals are no doubt salted.

On the farm De Bad, out of 285 cattle, 79 had died up to the 16th August. On that date they were inoculated with glycerinated gall; between August 16th and 19th, 12 died. On August 19th the remaining 188 were inoculated with defibrinated blood obtained from the station. The result was that 25 died, equal to 13·3 per cent.; the rest are now quite well. The same farmer applied on August 25th for enough blood for a herd of 376 animals; four had recently died. On August 26th the 376 beasts were injected with 30 c.c. each

of defibrinated blood. As a result the disease ceased after 16 animals, or four per cent., had succumbed, and the remainder are at present quite well.

Again, more recently, on a farm belonging to De Beers Company the herds were affected. Out of 472 animals 166 had died before inoculation was undertaken, leaving 306 which were inoculated with serum, after which only 46 died, or 15 per cent., the remainder of the herd being now quite well.

On the same farm 39 animals known to be infected were bought as a speculation and inoculated, with the result that they are all well.

As an illustration of the way in which serum or defibrinated blood may be expected to act in infected herds, we allowed 47 animals to take the disease spontaneously. These were injected at various periods after the commencement of the fever, with the following results:—

Day of Fever on which inoculation was performed.	Total No. inoculated.	Number alive.	Number dead.
First day	11	11	0
Second day	4	4	0
Third day	7	5	2
Fourth day	9	4	5
Fifth day	8	—	8
Sixth day	5	1	4
Seventh day	2	1	1
Ninth day	1	1	0
	47	27	20

The saving of life appears to be about 57 per cent., but if the list be examined, it will be seen that while the loss was only 9 per cent. of those injected up to and including the third day of the fever, it was as much as 72 per cent. when treatment was postponed.

This will explain the different results obtained in different herds. The farmer who is not observant, or who neglects to act promptly after discovering that his herd is infected, suffers more severely.

Moreover, of those which are alive, all but one were treated with serum, of those which died, only two received serum, the rest defibrinated blood. This, to a certain extent, is evidence that the serum not only does not lose much power by carbolisation, but that it is more powerful than a corresponding quantity of defibrinated blood.

With each sample of blood sent out for inoculation, we have always issued printed forms asking to be informed as to the circumstances of the case and the result obtained. We have sent out up to date 55,980 c.c. of serum which is enough for 2,800 animals and 355,020 c.c. of blood sufficient for 11,834 head, yet we very rarely are favoured with any reply to our request. When once the disease is stopped, the farmer takes no further notice, regardless of the fact that we are thus compelled to work to a great extent in the dark. If the result is not favourable we hear of it quickly enough.

Duration of Immunity.

The duration of the immunity conferred by the methods hitherto considered, *i.e.*, the gall, the glycerinated gall and the serum, varies considerably.

The pure gall is undoubtedly the most powerful, the action much resembles that of vaccine in the case of smallpox, and just as vaccine does not confer the same amount of protection as does an attack of smallpox, so the gall fails to protect to the same extent as rinderpest. The immunity conferred by gall may be taken on an average as being four months, and as in Russia, the rinderpest has been shown to protect for five years, the bile immunity is therefore about 1-15th of the natural protection. There are, it is true, reports which represent that the gall immunity has worked out in three weeks or so, but in these cases there can have been no immunity. Either the gall was taken from an animal which had never suffered from rinderpest at all, or it happened to be one of those samples which are occasionally found in animals dead of the disease, and which are void of all protective powers. The glycerinated gall will not protect for ten days in doses of 15 c.c., the dose of 24 c.c. will protect longer. Serum in doses of 20 c.c. protects for about the same time; by using larger doses, 100 c.c. or more, the French experts inform us the immunity may be prolonged to two months; bnt these results we have not yet had time to verify.

It has been recommended to inject the animals with blood after the use of either of these means of protection. The fact that the animals at the station were more immune than those operated on elsewhere, gave some reason for this statement, because these beasts were, as a matter of routine, tested with blood after bile inoculation. All previous experiences gained in treating kindred diseases, show that a febrile reaction is necessary to the production of an active and prolonged immunity. But this reaction was not manifest in this case. Yet, as the use and effect of bile was novel, and as the facts seemed to support this opinion, the use of blood was recommended. Recent events, however, show that the rinderpest in this respect conforms to the general rule, and that immunity conferred by the use of rinderpest blood is slight, unless followed by a reaction, which is very unusual when the blood is used after bile.

The animal may be salted by the use of small doses of virulent blood after gall and glycerine, but the process is very dangerous. More than half the animals die when so small a quantity as 0·2 c.c. of really virulent blood is used; the reason that more accidents have not occurred is that the blood used, having been mixed with citrate of potash, is very inactive. Its inactivity is shown by the long incubation period and the very large proportion of animals inoculated with this blood, for the purpose of procuring gall, which recover. Besides, the quantity employed is very small. Many of the animals in consequence do not react after this treatment, and are therefore not properly protected. The serum or defibrinated blood can be made to give a long immunity if it is used after the animal has become infected, or if the animal be purposely infected after the use of the blood or serum. The French experts do this by smearing the nose of the animals with rinderpest excreta, blood, etc., after the inoculation of 100 c.c. defibrinated blood, and then put them in contact with animals suffering from the disease. The animals on the fifth or sixth day are again inoculated with another 100 c.c. of the defibrinated blood. In this way many of the animals take the disease, and a large proportion of them salt. Our experience with infected herds in which we have used the defibrinated blood or serum have convinced us that this means of infection is very uncertain and cannot be relied upon. We have known farmers practice this process successfully, but others lose rather heavily. The only two instances of heavy loss which have come to our personal knowledge showed a death rate of 22 and 24 per cent. respectively. Many experiments have been made by us, by inoculating first with serum in various doses, and then one, two, three, four and five days after injecting the

virulent blood, and we have in all cases eventually succeeded in immunising the animals. But we do not recommend this process, because, using the same serum, the same dose of blood at the same interval, we obtain results which vary.

Some of the animals show no reaction, some react to a slight extent, others are very ill, and are only rescued by the administration of a second or third dose of the serum. No doubt the difference is to be explained by the different constitutions of the animals; some excrete the chemical immunising substance slowly, others more quickly. Hence the virulent blood acts with varying intensity. This difficulty can be overcome at the station when the temperature and condition of the animals can be observed twice daily, but it is probably not possible to do so on the veld.

Inoculation with Rinderpest Blood simultaneously with Serum.

The successful result obtained on the De Beers farm, Brakpan, where the majority of the animals were already infected, and after the inoculation of serum nearly all recovered, induced us to experiment in the direction of inducing infection *before* attempting to immunise.

Our experiments have proved so successful that we are able to recommend a process which appears devoid of most, if not all, difficulties we have mentioned.

Process to give a prolonged immunity to animals not already infected with rinderpest.

Serum and not defibrinated blood must be used.

(1) Because it can be kept, which is a great advantage, especially now in the hot weather, when the transport of blood would be difficult, if not impossible. Moreover, it permits the farmer to keep a small supply by him for emergencies.

(2) The strength of the defibrinated blood or of the serum of different animals varies somewhat. In the case of serum it has been found to fluctuate between as little as 10 c.c. and as much as 20 c.c. This is a great practical difficulty when dealing with defibrinated blood, because it is necessary to suit the dose of serum to the dose of virulent blood.

Serum allows us to overcome this difficulty readily, because, as it keeps, we can mix the serum obtained from a large number of animals. This alone tends to reduce the strength to an average. But we are not dependent upon this; we can actually test the serum, *i.e.*, ascertain by experiment its power, and when sending out serum for actual use in the veld we can give definite instructions as to the dose, both of the serum and the blood, to be used.

(3) The use of defibrinated blood is not without danger. All blood used at the station is carefully examined, and the danger is in great part avoided; but still, it has happened that malarial disease has been conveyed by means of blood due to an organism in the red corpuscles, and two animals have died from this cause. Redwater may be communicated in this way, and various other diseases. But the serum is not open to the same objection, at least not to anything like the same degree. The experiments we have lately concluded show that it is necessary to ensure *actual infection*, for without this there is no permaneut safety. While its power lasts the serum protects the animal and prevents its infection with rinderpest, but as soon as the effect of the serum passes off the animal again becomes susceptible to the disease, and on exposure to its infection may contract it and die. The farmer in whose herd the disease has appeared, and after using serum finds that the disease has

stopped short, and who has lost none of his animals, rejoices. We, who know the truth, are, on the contrary, sincerely sorry for him, because we feel certain *that the serum used has been too powerful.* None of his animals has suffered severely, and in all probability very few of the herd are therefore salted. The herd in which several have died is usually in a much more satisfactory state. This opinion, the result of our experiments, is in accord with the facts observed in Russia, and is greatly strengthened thereby.

The object therefore, is to insure infection of as definite and severe a character as possible, and at the same time to administer the serum in such a dose as to ensure the safety of the animal. It will then have suffered from the disease, and will enjoy as high and durable a degree of immunity as it is possible to confer. This object may be easily obtained by injecting the virulent blood, 1 c.c. on one side of the animal, and immediately after 5, 10, 20 c.c. of the serum on the other side.

We direct the blood and serum to be injected in different sides, not because this is of importance—if they are injected away from each other this is sufficient—but if they were introduced together or in close proximity the serum would infallibly destroy the rinderpest virus and the animal would not become ill.

Used in this way the virulent blood infects the animal before the serum has time to take effect; the rinderpest organisms enter the blood immediately and immediately begin to multiply. The serum does not produce its effect before some hours have passed. Thus the presence of the organism in a blood containing a chemical immunising substance of a definite strength is ensured. The organism not actually destroyer, but it is attenuated. The animal suffers from a modified form of the disease, showing all the usual symptoms, and is salted. Our experiments have been made upon 29 animals. These have been treated as follows:—

Number of animals.	Dose of Serum.	Number which died.
11	20 c.c.	1
12	10 c.c.	8
6	5c.c.	6

These animals were not treated in any way; we have not even administered a second dose of serum, which, in case of necessity, the farmer would be in a position to do with good effect.

Besides these we have treated 7 other beasts in a similar manner, except that we have employed 30 c.c. of defibrinated immunising blood instead of the 20 c.c. of serum, in order to demonstrate that the action of both fluids is similar. One of these animals died, all the remainder were sick but recovered.

The charts have been carefully kept, and though we cannot publish them in this report they are open to inspection, and we trust the Government will at a future time give us an opportunity of putting them before the public in a final report, which will enter more fully into the scientific side of this most interesting question. We have in this preliminary publication confined ourselves as much as possible to directions in plain language as devoid as the nature of the case permits of technicalities for the purpose of general information.

Treatment of Herds already Inoculated with Koch's Bile.

We must now offer some remarks with regard to animals which have already been subject to the Koch treatment.

When the immunity which has been conferred on them by this process wears off after a few months or so, they usually, but not invariably, take the disease mildly and salt. The progress of the disease is usually slow in the herd, first one and then two animals becoming sick, the numbers gradually increasing. These beasts respond readily to the action of the serum, but unless they are actually sick at the time the serum is injected they do not salt.

The fact that the immunity conferred by the gall does not cease uniformly in the herd occasions peculiar difficulties, because it is practically impossible to inject all the animals simultaneously with the virulent blood. If a small dose is used a large percentage do not suffer, and are consequently not immunised; if a larger dose is used we risk losing a certain number. We propose making further experiments to settle how this difficulty may be best met.

In the meantime the matter is robbed of much of its importance now that the serum which will keep will soon be available. The farmer can always keep a small supply by him, and treat each animal as it appears to become sick. At present this is the best advice we can offer.

Potency of the Serum.

In conclusion we wish to draw attention to the remarkable power displayed by this serum, a power which has never hitherto been surpassed. It is true that 10 c.c. of anti-diphtheritic serum are often sufficient in the case of human inoculation, but the size of the patient must be considered. The anti-diphtheritic serum is usually injected into an infant, and though the weight of the dose is only a fraction of the body, the fraction of anti-rinderpest serum is much smaller.

We have demonstrated the possibility of success after using only 10 grammes in an animal weighing 360 kilogrammes;* that is to say one gramme is sufficient to protect 36,200 grammes of body weight. If the amount of the active chemical substance could be determined, this last figure, basing our opinion on the facts known with regard to anti-diphtheritic serum, must be about 1 in 3,620,000,000.

We have tested the immunising power of the normal serum but cannot discover that it exerts any action even in doses of 250 c.c.

It will be observed that we have carefully avoided the term "antitoxin." We have done so because there is room for difference of opinion as to the actual nature of the chemical substance to which the serum owes its power. It way be due to a bactericidal substance, *i.e.*, something which acts in the body on the microbe itself, or it may be due to an antitoxine, *i.e.*, something which acts in the body on the poison developed by the microbes. The former supposition is the more probably correct. As the cost of making experiments to determine this point under the circumstances is practically nothing, they will shortly be undertaken.

In conclusion, we beg to point out that the work we are bringing to an end we have systematically pursued since Koch's unavoidable departure upon lines which we have reason to believe he himself would have followed had he remained.

We have, etc.,

(Signed) GEORGE TURNER.
" WILHELM KOLLE.

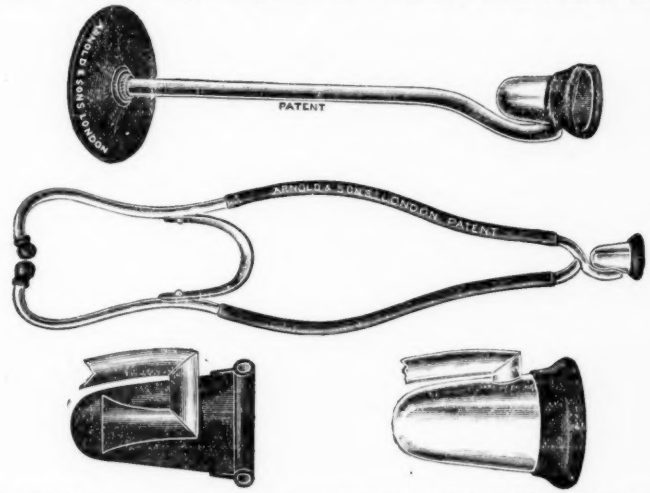
* A gramme is the French unit of weight equal to 15·43 grs. Troy. A kilogramme is equal to 2·2 lbs. Avoirdupois.

THE PHONOPHORE.

An Improved Stethoscope.

(Patented.)

As in the production of scientific instruments to promote vision, endeavour is made after greater clearness and penetration, so it is natural that in the manufacture of instruments to aid hearing, for scientific purposes, the greatest scope for the exercise of that sense should be aimed at. Several stethoscopes having this object in view are procurable; but practical experience teaches us that excessively high auditory power in such an instrument is rather confusing than useful, and that convenient and uncomplicated portability is essential to any instrument coming into general use. Messrs. Arnold & Sons, of West



Smithfield, have devised an instrument which seems to include the conditions necessary to practical utility. By an ingenious adaptation of the "ear trumpet" principle of accumulating sound to the chest piece of a stethoscope they have produced an instrument which increases auditory power to a useful degree. The Phonophore, as they purpose naming their modified stethoscope, is made on the flexible binaural and straight forms; for it will not be denied by practical men that there are circumstances in which the use of the rigid instrument is to be preferred. The Phonophore has been practically tested and found to be the best instrument as yet brought before the notice of the profession.

Notes and News.

Ichthyol for Stings and Bites.—Dr. W. Ottinger, a German physician, announces the discovery that ichthyol is an admirable remedy for the bites of flies and gnats and the stings of bees and wasps. The application quickly relieves the swelling, pain, and inflammation. It should be applied pure, in

a thick layer. The writer has found ichthyol to be an excellent remedy for mosquito bites. The pure ichthyol should be painted over the affected surface. A bit of soft tissue paper may be applied to protect the clothing. The application not only relieves the swelling, but also the inflammation, pain, and itching, which disappear within a few moments after the application is made.

RACEHORSES KILLED IN A TRAIN.—About a week since a serious accident befel a Midland train at Luffenham, near Stamford. It appears that a horse-box special, conveying racehorses from Leicester to Newmarket, left Wigston Station, near Leicester Racecourse, at half-past nine o'clock, and proceeded along the Peterborough line as far as the village of Luffenham, where it is surmised that an axle of one of the horse-vans broke and practically wrecked the train. Several vehicles left the line and were smashed, and a terrible scene of confusion ensued. The engine and one horse-box passed safely through Luffenham Station; but, from some cause unknown, a second horse-box struck the points, and with other boxes was thrown off the line and dashed several yards up an embankment. The body of the second horse-box—in which were Major Lambton's horse, Titan, and Mr. J. Cannon's White Frost, and two stable youths, named Parker and Jackson, both of Hull, and Frank Smith, of Newmarket, in the employ of Mr. Sherwood—was completely lifted off the base, and Titan was killed on the spot. Mr. Cannon's horse escaped injury, and when assistance arrived White Frost was found standing by the dead animal. The stable attendants were extricated and taken to Stamford by a special train. All three were conveyed on stretchers to the infirmary. A boy named Fordham was also hurt, but his injuries were not serious, and he was allowed to proceed home. Smith, in an interview, stated that they seemed to be going at a very rapid speed, and his companion, a man named Hind, made the remark, "If we go on at this pace we shall soon be home." He had no sooner spoken than there was a big jolting of carriages, and their's turned over on to its side. Smith found himself half dazed among broken glass, his head bleeding profusely. He saw his mate scrambling through the window of the carriage, and followed his example. Hind was unhurt, but the horses in the carriage—Lord Dunraven's Kirschwasser and Mr. W. Sherwood's Splendour—were badly cut about.—*Veterinary Record*, 27th Nov.

AT a meeting of the Christchurch and Bournemouth Conservative and Liberal Unionist Association, held on 18th November, the Right Honourable Walter Long, Esq., M.P., Minister of Agriculture, in his speech, said:—During the last few months he had been the object of much criticism. If he had formed a scrap-book of them, the letters he had received would for style, caligraphy, elegant phraseology and force of language, have proved an absolutely unique collection, but, unfortunately for posterity, he had found another use for these letters. He had been told in some of them that the writers would not have condemned his dog muzzling if the cases he had relied upon had been genuine cases of rabies Now, he asserted that there was not in any record or publication for which the Minister of Agriculture was responsible, any case quoted which had not been verified by careful examination on the spot by a veterinary surgeon, and subsequently by investigation at the Browning Institute in London, and by consideration of the whole facts by his veterinary advisers. As regularly as the circle widened which in the reports indicated rabies in dogs, as regularly did the circle widen which represented hydrophobia, the corresponding disease in human beings. As an instance of the good accomplished by muzzling, he mentioned that whereas in Lancashire and the West Riding of Yorkshire, there were, in 1895, 446 outbreaks of rabies up to November, 15, there were this year up to the corresponding date, even with but intermittent muzzling,

only 37 outbreaks, and of these 37, 24 were in the early part of the year. Then, in London, whereas there were in 1896, up to November 15th, 161 outbreaks, the numbers had fallen during the corresponding period of 1897 to 29, of which 19 were in the first half of the year. The same result was shown in the central counties of England, a fall from 34 cases to six. England as a whole had shown a decrease from 608 cases in 1895, to 412 in 1896, and to 141 in 1897 during corresponding periods. These figures were a sufficient answer to the allegations that his policy was not likely to succeed. His department had stamped out foot-and-mouth disease and cattle plague. Pleuro-pneumonia had been reduced to zero almost. They had dealt successfully also with other diseases, but always under the same kind of criticism. If that hall could be filled with his critics, and he was to bring into it one human being suffering from hydrophobia, they would be at once silenced. He claimed that he and the officials of his department, had been actuated by praiseworthy motives, and that their policy had been amply justified by its results. He thanked the meeting for the confidence they had expressed in the Government, and assured them that so long as the Ministry possessed the confidence and goodwill of their fellow-countrymen, they should be content to labour with all their energies to serve the truest interests of the nation.

ANTHRAX IN DUMBARTONSHIRE.—An alarming outbreak of anthrax was reported on Wednesday evening to the county authorities of Dumbarton by Mr. Malcolm Walker, veterinary surgeon and inspector for the western district under the Contagious Diseases (Animals) Act. Mr. Walker had been called upon to attend two cows belonging to Mr. John M'Intyre, dairyman, Middleton Street, Alexandria, which had been ailing. As he suspected the animals to be affected with anthrax, he sent a sample of the blood to Professor Williams, of the New Veterinary College, Edinburgh, who having examined it, reported that he had found it swarming with the bacilli of anthrax. On receipt of this report, Mr. Walker at once passed an order on Mr. M'Intyre forbidding the sale of his milk. The cows affected had been grazing in the neighbourhood of Balloch, and Mr. Walker, pending the decision of the County Council, as local authority, and the Board of Agriculture, has sent notice to farmers and cattle dealers in that area forbidding the removal of all cattle.—*North British Agriculturist*, 24th November, 1897.

Extracts from Foreign Journals.

THREE CASES OF UNSUCCESSFUL TREATMENT WITH TETANUS ANTITOXIN.

I.—A 13-year-old gelding of the Sixth (German) Cuirassiers showed on the morning of 20th January symptoms indicating a high degree of tetanus; mouth tightly shut, pulse 42, breathing 18, temperature 99° Fahr.; nostrils wide open, feeding impossible. No wound to be found despite the most careful search. At 11 a.m. patient receives five grammes (one gramme= 15½ grains) antitoxin by intravenous injection; at 4 p.m. shows a desire for food and drink, but in consequence of trismus is unable to take either. Next morning condition much worse; great excitement, severe outbreak of sweat, pulse and temperature much higher. Death at 2 p.m.

II.—Artillery horse, which had received a wound 17 days previously a little above the zygomatic arch, became ill, showing symptoms of tetanus. In this case tetanic recurvature was very strongly marked, and increased to such an

extent in the course of 24 hours that the patient fell down. He received, 20 hours after the appearance of the first symptoms, a curative dose of antitoxin in the usual way. Six hours afterwards the patient became very restless, and sweat broke out all over his body; his general condition grew rapidly worse, and he died 17 hours after the injection.

III.—A horse had been wounded by a small piece of wire penetrating the frog, but as neither bleeding nor lameness supervened, the animal was allowed to work on. Nine days afterwards symptoms of tetanus appeared and an intravenous injection of five grammes of antitoxin was made. Patient died three days later.—*Zeitschrift für Veterinärkunde.*

A PRINCELY GIFT.

The King of Sweden has (says the *Central Zeitung*) set aside a sum of 2,200,000 kronen (£123,750) for the stamping out of tuberculosis. This sum was the gift of his subjects on his attaining the twenty-fifth year of his reign.

EXCISION OF NERVES.

Veterinary-surgeon Röder attributes very moderate importance to this operation, saying that patients generally become unfit for use a year-and-a half after it is performed. According to his experience, the disorders which prompt the operation make rapid strides when the nerve is removed. In such cases, the outgrowth of bone on the coronet is so strong that the direction of the foot-axis is completely changed, and the horse touches the ground only with the outer rim of his shoe.—(*Sächs. Vet. Berichr*, 1896.)

Review.

THE ANNUAL STATISTICAL AND GENERAL REPORT OF THE ARMY VETERINARY DEPARTMENT, FOR THE YEAR ENDING 31ST MARCH, 1897.

These blue books published by the Army Veterinary Department at the end of each year, are always very interesting reading for anyone who has a taste for statistics; the formidable array of figures, however, will probably deter the average person from indulging in these reports as a means of relaxation from the sterner duties of life. Still, anyone who wishes to compare the results of his own practice and experience with those of a highly-organised and stringently-regulated Government department, where everything ought to be, and no doubt is, conducted on the most approved principles, will be able to indulge his inclination to his heart's content if he procure the statistical report at present under consideration.

As is usual, the general report has first place, and from it we learn some very interesting facts regarding the working of that department of the army with which we, as veterinary surgeons, might be supposed to be particularly concerned. First, as regards the Home Department. A percentage of 2·52 of deaths cannot be considered at all a high one, though it is apparently slightly higher than that of the two preceding years. The mortality, it appears, was highest in the months of May, July, and March, and lowest in December, June, and April. Our readers will no doubt find it profitable to compare this

statement with what they found to be the case in their own practice. The admissions to treatment were some 61·10 per cent. of the average strength, and while most numerous during May, June, and April, were fewer during December, January, and November. Compare this with the condition of affairs in the previous year, when the most numerous admissions were made in August, July, and May.

It is noteworthy that no cases of glanders have been encountered since 1888; in October of which year a case occurred at Hounslow.

It is found that horses of the ages of four and five years are more commonly subjects for treatment than those of riper years.

In Egypt we are told that "the general health of the horses may be considered very satisfactory."

One case of glanders was reported, on the 30th of October last, in Matabeleland, but "owing to the energetic measures taken, no further cases occurred."

In the Army Vaccine Institute lymph was cultivated for no less a number of persons than 44,451, for which 17 calves were necessary. Here are some figures which may possibly surprise some of us. "The greatest amount of lymph obtained from one calf was sufficient for 7,500 persons, and the smallest obtained was for 862 persons." "Average daily issue of lymph was sufficient for 114 persons." Someone evidently has been fairly busy.

The statistical tables which conclude the report give us, as it were, a bird's eye view of the relative frequency of various diseases. As we should naturally expect the greatest number of cases calling for treatment are those of the locomotor apparatus and surgical diseases and accidents; 2,089 cases in which the locomotor organs were implicated have been treated in the course of the year. The number of surgical diseases and accidents is even greater, being 3,110. The urinary organs, liver and spleen are apparently very seldom affected by disease; there being only six cases of derangement of the urinary organs, and five cases in which the liver and spleen were concerned. The mule is evidently much freer from disease than its big cousin, the horse.

It is noteworthy that among the horses in Egypt, no cases of disease of the liver and spleen are reported; whereas in Natal, five such cases have occurred; that is, in Natal as many cases have occurred as at home, although the number of horses is, of course, very much less.

These are only a very few of the very interesting facts to be gleaned from the report; and space forbids any further extracts.

We must congratulate those who were responsible for the drawing up of the tables, upon the thorough manner in which they have accomplished their task, not by any means a light one. And we must further congratulate those who had the care of the sick, upon the remarkable efficacy of their line of treatment, for, as we have previously stated, the percentage of mortality is notably low.

Correspondence.

SIR,—Messrs. Arnold and Sons, London, have made at my suggestion a castrating and embryotomy knife combined, which I think will be of great use to the veterinary surgeon.

The advantages to be derived from using same are as follows:—In castrating bystanding operations the blade of the knife being hockpointed, does not slip and cut the left hand as is often the case when using an ordinary castrating knife. It can be shut with the right hand and retained there without leaving go of the testicle with the left, or having to pass the knife to

anyone to hold. Any instrument can be used with the knife still fixed on to the middle finger of the right hand.

In embryotomy the advantages to be gained are as follows :—The operator can use the knife and shut it, within the uterus, without having to withdraw

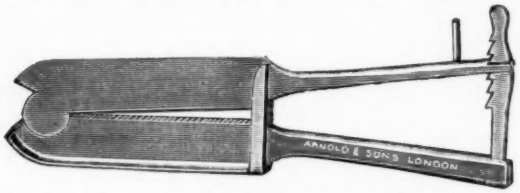
the hand as is the case with most other knives and thereby saving a lot of trouble in getting back the hand again to the same place as before, which is rather difficult in cases where there is a lot of cleaning about.

(Signed for) J. J. DEANS.

To the Editor of THE VETERINARY JOURNAL.

Llangollen, N. Wales.
October 8th, 1897.

DEAR SIR,—I desire to bring before the notice of the veterinary profession an improved castration clam. The clam consists of the ordinary form of clam with the spring regulating rack; it has a raised portion at the outer edge of



the left blade of the clam. This raised edge prevents the iron slipping from the clam during operation. It will, I am sure, prove advantageous to those practitioners who castrate solely with the iron. Messrs. Arnold and Sons, London, are the makers.

Yours truly,

ROBERT PLATT, M.R.C.V.S.

Communications, Books, Journals, etc., Received.

The Lancet; Land and Water; Veterinarian; Veterinary Record; American Veterinary Review; Journal of Comparative Medicine; Australian Farm and Home; Results of Use of Tuberculin, by James Wilson, M.A.; Bacteriological Diagnosis, by St. John Reid; Country Life Illustrated; Recueil de Médecine Vétérinaire (Alfort); La Presse Vétérinaire (Paris); L'Echo Vétérinaire (Liége); Annales de Médecine Vétérinaire (Brussels); Berliner Thierärztliche Wochenschrift (Berlin); La Clinica Veterinaria (Milan); Il Nuovo Ercolani (Pisa); La Revista Veterinaria (Buenos Aires); Deutsche Thierärztliche Wochenschrift (Hannover und Karlsruhe); Archivos de Medicina (Lisbon: José Bastos).